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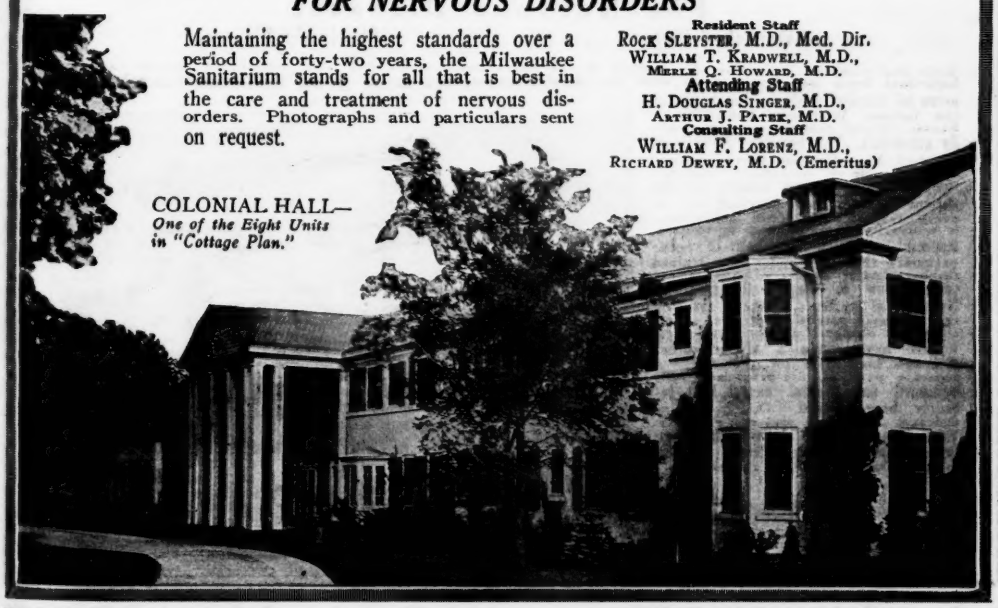

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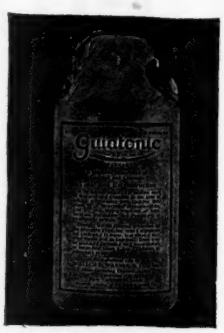

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ILLINOIS MEDICAL JOURNAL

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Society proceedings and news items and changes in the mailing list to Dr. Henry G. Ohls, Managing Editor, 1618 Juneway Terrace, Chicago.

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Editorial

THE 76TH ANNUAL MEETING

The Seventy-sixth Annual Meeting of the Illinois State Medical Society was held at Champaign-Urbana May 18 to 20. The meeting was one of the best the Society has ever held. The attendance was nearly one thousand. Every thing that could be done to make the meeting successful, was done. The Mayors of the Twin Cities, The University of Illinois, The Chamber of Commerce, and every other organization there, assisted the Committee on Arrangements to make the Society's sojourn there, most pleasant.

The programs were well arranged and carried out according to schedule. The usual custom was changed, in having two men on each Section program from outside the State of Illinois, and this proved to be a popular procedure. Diagnostic and teaching clinics were held in joint sesion Wednesday afternoon and Thursday morning, which were very instructive and well attended. In addition to the many commercial exhibits, there were some interesting scientific exhibits from the University of Illinois Research Departments, University of Illinois Medical School, Northwestern University Medical School, the American Medical Association, and other organizations. The University of Illinois had an exhibit of the recently discovered element "Illinium."

The following officers were elected by the House of Delegates:

President-elect, G. Henry Mundt, Chicago.

First Vice-President, Earl D. Wise, Champaign.

Second Vice-President, C. S. Nelson, Springfield.

Secretary, Harold M. Camp, Monmouth.

Treasurer, A. J. Markley, Belvidere.

Councilor, 1st District, D. B. Penniman, Rockford.

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Councilor, 8th District, Cleaves Bennett, Champaign.

Councilor, 10th District, J. S. Templeton, Pinckneyville.

The following delegates and alternates to the American Medical Association were elected:

Delegates—E. P. Sloan, Bloomington; R. L. Green, Peoria; T. O. Freeman, Mattoon; C. J. Whalen, Chicago; W. A. Pusey, Chicago; J. S. Nagel, Chicago.

Alternates—G. C. Otrich, Belleville; A. Alguire, Belvidere; G. C. Brown, Ste. Marie; S. J. McNeill, Chicago; N. S. Davis, Chicago; Emmet Keating, Chicago.

On account of the fact that the old 9th Councilor District was composed of 23 counties, and its territory was approximately 150 miles each way, the House of Delegates voted to create a new 10th Councilor District composed of the following counties: St. Clair, Washington, Monroe, Randolph, Perry, Jackson, Union, Alexander and Pulaski. J. S. Templeton of Pinckneyville was elected Councilor of the new district.

The Society will meet in Moline for the 1927 meeting; the exact date will be selected within a short time.

The proceedings of the House of Delegates will be published in the July issue of the JOURNAL.

The portrait of President Pfeiffenberger appears as a supplement in this issue.

MEETING IN HONOR OF DR. J. C. KRAFFT

Friday evening, May 7, the Physicians Fellowship Club convened to do honor to Doctor J. C. Krafft, one of their charter members and President of the Illinois State Medical Society.

All but two of the speakers were prominent members of the State Society living outside of Chicago. They came from as far away as Springfield to tell the club of the fine record made by Doctor Krafft in the year that will close with the annual meeting at Champaign.

Doctor Frank R. Morton, Secretary of the Chicago Medical Society, told of the campaign for membership that has just been made to increase the numerical strength of the Chicago Medical Society and informed the members that he had made arrangements for a room at Champaign to be used as headquarters for the physicians from Cook County. Doctor W. D. Chapman, chairman of the State Council, called our attention to the fact that the present Post Master General is the first physician to sit in the cabinet of the President of the United States since the administration of George Washington. He dwelt upon the immense amount of work necessary to the advancement of interests of the State Society and well said that "the mantle would continue to fall upon the shoulders of those willing to work."

Doctor J. W. VanDerslice spoke of the difference in knowledge of medical economics and of what was for the good or ill of the medical profession, possessed by members of the House of Delegates of the American Medical Association today as compared with the vague understanding of the delegates of only a few years ago.

Doctor Edward H. Ochsner sounded a warning against physicians relinquishing their duties as teachers and controllers of medical colleges and of permitting nurses and other lay individuals to render service to patients that could be properly given by physicians only.

Doctor Harold Camp, Secretary of the State Society, gave a short history of the founding of the State Society and reminded us of the difficulties of those pioneers who kept the torch alight when roads were muddy and transportation was hazardous and time-consuming.

Doctor Camp spoke of the necessity of an endowment fund for the Lay Education Committee, which was first recommended to the House of Delegates by the Public Policy Committee last year at the Quincy meeting.

Doctor J. R. Neal, the efficient and faithful guardian of the public and the profession at Springfield, laid special stress upon the vital importance of the local societies making it their watchful duty to see that the legislators in their respective districts are properly informed, and have an intelligent understanding of what is good for the public in matters pertaining to health.

In closing, Dr. Neal very aptly quoted:

"One ship drives east and one drives west
By the self-same wind that blows;
It's the set of the sail, and not the gale,
Which determines the way it goes."

—reminding us that our Krafft was returning to the home port after a strenuous and successful voyage and that all of us who could should be at Champaign to give him a hearty welcome.

THE MEDICAL AND DENTAL ARTS CLUB OF CHICAGO—A PERMANENT HOME FOR MEDICINE, DENTISTRY AND ALLIED INTERESTS

Successful development of plans of the Medical and Dental Arts Club for erection of a building in down-town Chicago will have far-reaching effect on professional activities in Chicago and throughout the central part of the country. In its main features the plan is by no means new. Need and desirability of a special building and permanent home for professional men and organizations of Chicago has been recognized for years. Chicago Medical Society records show that by this body a permanent home has been frequently discussed. For almost twenty years, one of the permanent committees of the Chicago Medical Society was what was known as the "Permanent Home Committee." In the bulletin of the Chicago Medical Society for November 4, 1905, appears a list of standing committees. At that time the permanent home committee consisted of Dr. Nicholas Senn, Dr. Frank S. Johnson, and Dr. D. J. Doherty. At the Council Meeting for February 13, 1906, Dr. C. S. Bacon, President, appointed Dr. J. B. Herrick as a member of this committee.

On October 4, 1905, the Physicians' Club held a meeting at the Sherman House. Dr. Frank Billings was Chairman and Toastmaster. The subject for the evening was "A Permanent Home for the Chicago Medical Society." Dr. Charles Loomis Dana of New York was the guest of honor. He spoke on the history of the New York Academy of Medicine and offered suggestions as to how the Chicago Medical Society could secure a permanent home. Discussion was led by Dr. Fernand Henrotin, Dr. Nicholas Senn, and Dr. E. Fletcher Ingals. Many of the men are gone who were associated with this discussion 25 years ago. Now, long after their time, the first practical plan has been developed for giving permanent quarters to the medical and dental professions of Chicago.

All efforts in the past failed of development because when carefully analyzed, it will be seen that all such proposed plans had some radical, fatal defect.

The first difficulty has been that these endeavors were isolated efforts on the part of individual organizations. Neither the Chicago Medical Society, the Chicago Dental Society, the Institute of Medicine, nor any of the special societies is large enough and strong enough by itself to buy a site under present real estate conditions, and to erect and operate a building successfully from a business standpoint. For each of our thirty or forty special organizations to attempt to secure and to maintain a home of its own would be impossible and wasteful. The present movement is a demonstration of the adage that "In union there is strength." What cannot be done by each organization separately can be done by all when working in harmony. Past efforts have been limited to collection of funds by subscription. Subscription papers are never popular. By selling memberships, the individual is given something for his money. In this case membership carries part ownership and an equity in a down town office building. A similar opportunity has never before been presented to Chicago professional men. Now under consideration is issuing stock in proportion to membership payments. If adopted, as seems probable, these memberships will support and promote a permanent professional home for all of our organizations, and they will be a very profitable and desirable form of investment.

Owing to the peculiar geographic situation of Chicago, any plan for a professional center must include a location in the down town district. Because of the high price of down town real estate and the amount necessary for financing a building in the "loop," any building proposition to be successful must provide sufficient income from the building to meet the overhead and upkeep of the building, as well as to provide funds for paying the interest and retiring the bonds over a term of years. No single existing professional or scientific organization could expect to acquire a site and to erect a centrally located building. Combined rentals of all of our professional organizations would not furnish sufficient income to make such a plan financially successful. It is absolutely necessary, therefore, that an adequate proportion of the total space in such a building should be available for rental and should provide a sufficient income to carry out successfully the financial plan. There are two obvious sources from which tenants of such a building should be secured. One is from physicians and dentists desiring office space in a thoroughly modern building owned by themselves. The other from commercial firms dealing in medical and

dental supplies, who would naturally prefer to be located in a building devoted entirely to professional purposes.

operating a professional building can do what purely professional and scientific organizations can not do in the way of financing and manag-

Medical and Dental Arts Club of Chicago

The Medical and Dental Arts Club, composed entirely of members in good standing in the Chicago Medical and Chicago Dental Societies and incorporated for the purpose of building and

ing a building for physicians and dentists. This club is in effect a holding company by which each and everyone of our professional bodies can preserve its own identity and independence, and at

the same time can participate and share in the benefits and advantages of a permanent home without assuming any legal or financial responsibilities or liabilities of its own. All that is necessary, is for the leading members of each of these separate organizations to become members of the club and by their financial and personal support assist in completing this project. Ample room will be provided in the new building for regular meeting places for each of our professional organizations both large and small.

Erection of a suitable and impressive building in the down town part of Chicago, owned and conducted by the medical and dental professions will be a demonstration and object lesson to the public of the standing and influence of these professions. The plan being worked out by the Medical and Dental Arts Club is the only tangible and definite idea for a suitable and permanent home for our medical organizations. It is the only one that has developed to the point of actual purchase of a valuable site and erection of a building. Interests of the membership and of the professions have been safeguarded in every possible way. The plan is endorsed by architects, lawyers, bankers, bond houses, and by construction companies, as thoroughly sound and feasible. Everything possible is being done to secure a beautiful, commodious, and centrally located home for all of our professional activities. It will be located in the center of the down town part of Chicago and it will be the center of professional activities for the next hundred years. All that is needed to complete this enterprise successfully and triumphantly, is the support and active co-operation of the leading men in the two professions. Membership is limited to 2,000 resident members, of which 600 will be life members and 1,400 regular members. Over one-half of the life memberships have been sold. Approximately 800 memberships of all kinds have been taken. It is safe to say that in two years, after the building is completed and opened, the Medical and Dental Arts Club will have a waiting list as have all the other down town clubs at present, and that the price of memberships will have advanced from 30 to 100 percent. If the membership campaign can be completed in the next three months, there will be ample funds for meeting present financial obligations, and for promoting the purposes of the organization and providing for the privileges and comforts for the members.

TEXAS MEDICAL ASSOCIATION COMMEND DR. C. ST. CLAIR DRAKE

Dr. C. St. Clair Drake, former Director of Public Health in Illinois and at present making a survey of health agencies in the United States for the American Public Health Association, has engratiated himself into the confidence of the practical hard boiled red blooded doctors of the self centered state of Texas as is apparent from the following resolution passed by the Texas State Medical Association, Section on Public Health. The following is the resolution:

Houston, Texas, May 26, 1926.

Be it Resolved, That the section on Public Health and State Medicine of the Texas State Medical Association express its thanks and appreciation to the American Public Health Association for the services rendered to the State and City Health Officials of Texas by Dr. C. St. Clair Drake. His guidance and support have helped these officials to promote plans and programs looking to the up-building of public health service in the cities of Texas through the coordination of the work of the official and unofficial agencies, the standardization of public health practice, and the harmonizing of these practices with the policies approved by the medical profession.

The above resolution unanimously adopted.

L. H. Martin, Secretary.
W. A. King, Acting Chairman.

AMENDING THE NARCOTIC LAW

The following are the proposed amendments to the present narcotic law. They should be read carefully by every physician in connection with the provisions of the old law and in connection therewith we suggest reading carefully editorial comment on the subject published elsewhere editorially in this issue and also comments in the Journal of the American Medical Association and other medical journals. After doing so we suggest that the individual members of the profession write the members of the committee on finance of the United States Senate and get busy with local senators and congressmen.

The following are the proposed amendments:

69th Congress
1st Session

S. 4085

IN THE SENATE OF THE UNITED STATES

April 19 (calendar day, April 24), 1926

Mr. Smoot introduced the following bill; which was read twice and referred to the Committee on Finance:

A BILL

To strengthen the Harrison Narcotic Act of December 17, 1914, as amended, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Harrison Narcotic Act of December 17, 1914, as amended, be further amended as follows:

SECTION 1. Strike out the period at the end of the fourth paragraph of section 1, substitute a colon, and add the following: "Provided, That any person addicted to the habitual use of opium or coca leaves, or any compound, manufacture, salt, derivative, or preparation thereof, when such use is not in the course of professional practice only, shall not be allowed to register under this Act: And provided further, That in addition to any penalty which may be imposed under section 9 hereof, any person hereafter convicted of a violation of this Act shall not be granted registration under this Act for a period of one year from the 1st day of July next following the date of such conviction."

SEC. 2. That the second clause of the twelfth paragraph of section 1 be changed to read as follows: "and the absence of appropriate tax-paid stamps from any of the aforesaid drugs shall be prima facie evidence of a violation of this section in the judicial district where such drugs are found by the person in whose possession the same may be found."

SEC. 3. Section 2, subsection (a) is hereby amended to read as follows: "To the dispensing or distribution of any of the aforesaid drugs to a patient by a physician, dentist, or veterinary surgeon registered under this Act in the course of his professional practice only: Provided, That no dispensing or distribution of the aforesaid drugs pursuant to the so-called ambulatory treatment for narcotic-drug addiction shall be construed to be in the course of his professional practice only: Provided, That such physician, dentist, or veterinary surgeon shall keep a record of all such drugs dispensed or distributed, showing the amount dispensed or distributed, the date, and the name and address of the patient to whom such drugs are dispensed or distributed, except such as may be dispensed or distributed in emergency cases only; and such record shall be kept for a period of two years from the date of dispensing or distributing such drugs, subject to inspection, as provided in this Act."

SEC. 4. Section 2, subsection (b), is hereby amended by inserting the following proviso after the first clause and before the first proviso thereof: "Provided, That such drugs shall not be sold, dispensed, or distributed under circumstances from which the dealer might reasonably deduce that the prescription was not issued by the physician, dentist, or veterinary surgeon in the course of his professional practice only: And"

SEC. 5. The first sentence of the second proviso of section 6 is hereby amended to read as follows: "Provided further, That any manufacturer, producer, compounder, or vendor (including dispensing physicians) of the preparations and remedies mentioned in this section shall keep a record of all purchases, sales, exchanges, or gifts of such preparations and remedies in such manner as the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, shall direct."

SEC. 6. That in the enforcement of the Act of Congress of December 17, 1914, known as the Harrison Narcotic Act, as amended, the provisions of section 3450 of the Revised Statutes shall apply, in so far as they are in anywise applicable thereto, and the said provisions of said section are hereby reenacted for that purpose.

STRIPPING THE MEDICAL PROFESSION OF ITS POWERS AND GIVING THEM TO A BODY OF LAWMAKERS

The Proposed Amendment to the Harrison Narcotic Act—Everybody Seems to Know All About Doctoring Except the Doctors

Further interference with the practice of medicine by politicians and lay people is being constructed under the proposed amendment to the Harrison Narcotic Act of Dec. 17, 1924. Everybody seems to know all about "doctoring" except the doctors!

If this amendment goes through, and it is likely to do so unless protest and pressure are brought to bear upon the men who make the laws at Washington, the public welfare will be seriously menaced. Further, this will be still another step in taking the practice of medicine out of the hands of men trained to alleviate human suffering and placing it under the jurisdiction of men who know nothing about it at all.

Ignorance is no excuse for what is about to happen. If eighty per cent of the medical men had realized the hardships accruing from the original Harrison Narcotic act there is no doubt but that it would have been prevented of enactment. Now comes another bundle of red tape. Nor is this all. The narcotic question is not the only one involved. But this amendment, as involved in Senate bill 4085, as introduced by Mr. Smoot on April 19 (calendar day April 25) read

twice and referred to the Committee on Finance, is the most drastic of all steps in stripping the medical profession of its powers and giving them to a body of lawmakers.

For if the Federal Government can prescribe and regulate the administration of drugs with narcotic qualities, so also can the Federal Government through this precedent, prescribe and regulate the administration of anything from bicarbonate of soda to mercury. The human body is too sacred an affair to be left at the mercy of all the men and women who have but a cursory knowledge of its functions. Yet unless there is a united and a stentorian protest against such measures as this Harrison Narcotic Bill amendment, that is exactly what is going to happen.

Nobody dreams of telling a tailor how much thread he shall make in a coat, nor how many needles he shall use on his sewing machine, nor how much water shall go under his "goose."

Yet a suit of clothes is a comparatively trivial and easily duplicated affair. Yet tailors and other craftsmen are presuming to dictate to men trained in the walks of science how science shall be interpreted to the enduring welfare of the human race.

The Harrison Narcotic law should never have been placed upon the Statute books of the United States. It is to be granted that the well-meaning blunderers who put it there had in mind only the idea of making it impossible for addicts to secure their supply of "dope" and to prevent unprincipled people from making fortunes, and fattening upon the infirmities of their fellow men.

As is the case with most prohibitive laws, however, this one fell far short of the mark. So far in fact, that instead of stopping the traffic, those who deal in dope, now make double their money from the poor unfortunates upon whom they prey.

Illegitimacy thrives and the legitimate uses of narcotics are brought to bay and are in a pitiable state as a result of this law.

The doctor who needs narcotics used in reason to cure and to allay human misery finds himself in a pit of trouble. The lawbreaker is in clover.

Mere draughting of a law does not enforce it. Prohibition enforcement is such a farce that no mention of it need be made. For ages men have legislated prostitution out of existence, yet uncontrolled sex appetites still do business at the same old stands.

Nature and the human emotions are subject to individual control, not black and white laws. It is costing the United States more to support bootleggers of both narcotics and alcoholics than there is good coming from the farcical laws now on the statute books.

As to the Harrison Narcotic law, it is as with prohibition legislation. People are beginning to ask, "Who did that, anyway?"

The protest against mock prohibition has already been carried to the nation's capital. The doctors should take up their cudgels and let a nation know that the laws prohibiting the dispensing of narcotics through legitimate channels for legitimate uses are merely hurting the nation they strive to help.

If this pending bill is enacted, a physician cannot dispense or distribute narcotic drugs pursuant to the so-called ambulatory treatment of drug addiction. Every doctor knows what this means. What will occur in thousands of instances if there is institutionalizing of every addict? It can't be done. And even if it were, who will foot the bill?

As an invasion of state rights for the benefit of a central bureaucracy, descending to colloquialism, this pending bill is a humdinger. If through its taxing power the federal government is permitted to determine those who may and who may not prescribe narcotic drugs by eliminating narcotic addicts or otherwise, it can extend this paternalism over the administration of anything else. Also it can tell each and every state just how to treat any case of disease should be treated. Gadzooks and gamins! Why call the town blacksmith to confine one's wife? Yet if the federal government decides that in Illinois such shall be the case, Illinois is going to have to stand for such supernonsense, after the workings of the amendments of the Harrison act and a few more shall have gotten into their stride.

The situation is absurd beyond belief. Yet in its very absurdity lies its strength. The thing that people consider so untoward as to be beyond the realm of happening is the thing that happens always. What is going to occur when state medical practice acts are superseded by federal statutes?

It means that medicine will be practiced by anybody from the corner newsboy to a chiroprac-

tic and ridiculous as this seems on the surface every statute points that way.

Now is the time for every physician worthy of the name to constitute himself a self-appointed committee of one and to make a personal and direct campaign among all of the politicians especially among those who sit in power and glory and mischief in the halls of the capitol at Washington.

Community, county and state medical societies and societies of special branches should begin this task at once. Help of the public press should be solicited.

Another evil angle is that the red tape involved in keeping track of the dispensing of narcotics, according to this amendment devolves upon the shoulders of every physician, the enlistment of an office force to keep track of what drugs are given and what are not. This is meddling in the rights of the individual to an unwarranted degree. The glory of a democracy is the protection of the privacy of individuals and homes.

Lady Cynthia Mosely and the Hon. Oswald Mosely came here from England this winter and declared themselves rabid socialists. When they saw what the American workingman had in the way of living conditions and comforts these two "pink socialists," as Mr. Mosely's own father calls them, took several steps backwards. They admitted that the socialists in America had more than the well-to-do in England and that the questions were far from similar in perspective.

That's the trouble with this reform legislation. The reformers do not know of what they speak.

This bill places czaristic police powers upon employes of the government and even the United States Supreme Court thus states the case: "The declared object of the Narcotic Law is to provide revenue, and this court has held that whatever additional moral end it may have in view must 'be reached only through a revenue measure and within the limits of a revenue measure.' Congress cannot, under the pretext of executing delegated power, pass laws for the accomplishment of objects not entrusted to the federal government. . . . Obviously, direct control of medical practice in the states is beyond the power of the federal government. Incidental regulation of such practice by Congress through a taxing act cannot extend to matters plainly inappropriate and unnecessary to reasonable enforcement of a revenue measure."—*Linder v. United States*, 268 U. S. 5, decided April 13, 1925.

Now in view of the fact that:

"Every prescription issued by a physician for a narcotic drug will be subject to review by any pharmacist who may be called on to fill it, if the pending bill is passed. If there are present 'circumstances from which the dealer might reasonably deduce that the prescription was not issued by the physician, dentist or veterinary surgeon in the course of his professional practice only,' the pharmacist cannot lawfully fill it. It is not necessary that the pharmacist actually deduce that the prescription was not issued in the course of professional practice; it is sufficient that he might reasonably do so. What constitutes 'the course of professional practice only,' the bill does not state. It presumes apparently that any pharmacist can determine in his pharmacy what took place in the sickroom or in the physician's office, and that he is sufficiently acquainted with the normal course of professional practice to be entrusted safely with statutory authority to refuse to any sick person medicine that the attending physician has prescribed," it would seem that the answer to the question, "Who practices medicine in the United States and who tells the sick how to get well?" should be, "Everybody in the country except the physician who is trained and expert in that branch of science and civilization."

One is moved to cite also the facts as stated that

"The purpose of this bill, says Assistant Secretary of the Treasury Andrews, is 'to clear up certain points which have been raised in certain courts to the disadvantage of the government.' These points are to be cleared up (1) by requiring collectors of internal revenue to refuse registration to physicians whom they believe narcotic addicts; (2) by requiring pharmacists to determine whether physicians' prescriptions were or were not issued in the course of professional practice, and to refuse to fill such as the pharmacist may reasonably suspect of not having been so issued; (3) by compelling physicians to keep records of every dose of any narcotic dispensed by them, except such as may be dispensed in emergency cases; (4) by forbidding everywhere the ambulatory treatment of narcotic addicts; (5) by requiring physicians to keep records of all

purchases of so-called exempt narcotic preparations, and (6) by denying registration for a period of from one to two years to any physician convicted of any violation of the Harrison Narcotic Act.

"Any collector of internal revenue, if this bill is enacted, must refuse to register under the Harrison Narcotic Act any narcotic addict. No preliminary notice and hearing are required. No grace is granted the unfortunate addict undergoing treatment in the hope of cure. Discretion is not allowed the collector. A narcotic addict cannot register, and the collector must act on such evidence as he has. The physician refused registration is left to redress in court, with all the publicity and loss of professional prestige which that procedure entails.

"The laws of many states already provide that licenses to practice medicine may be revoked if the licentiate is a narcotic addict. The Treasury Department presumably has knowledge of addicts holding such licenses, or it would not have asked the right to refuse registration to such persons. Its field officers, however, instead of being charged with the duty of initiating action before state licensing boards looking toward the revocation of such licenses, are expressly instructed not to do so. That the disclosure of the information they possess is not unlawful is shown by the fact that they may disclose it on request of a state licensing board. But the Treasury Department keeps these boards in darkness. Why it thus refuses to avail itself of existing agencies effectually to bar narcotic addicts from practice, while it seeks authority to accomplish the same end to a limited extent through this legislation, is difficult to understand. The only guess that can be hazarded is that while the evidence of addiction in possession of the Treasury Department may satisfy some lay collector of internal revenue, vested with arbitrary power, as to the habits of would-be registrants, it would be of doubtful value if submitted to an impartial tribunal of physicians, when the registrant could introduce evidence on his own behalf.

"The fact that Congress may not have authority to confer on the Treasury Department the power it here seeks does not seem to have occurred to those who drafted this bill. To determine who is and who is not fit to prescribe, administer and dispense narcotic drugs is to regulate the practice of medicine, whether that determination is based on supposed narcotic addiction or on any other grounds; and the regulation of the practice of medicine within a state is beyond the power of Congress."

The Board of Directors of The White Cross, Inc., of which Martin Conboy is chairman and W. K. McKibben secretary and associate directors, has adopted this resolution:

WHEREAS, there was introduced in the Senate of the United States on April 19 (Calendar day April 24), 1926, a bill (S 4085) to strengthen the Harrison Narcotic Act of December 17, 1914, as amended; and

WHEREAS, it would seem desirable for the Congress of the United States, in connection with the consideration of such proposed amendatory legislation, to review the field of narcotic regulation with a view to adopting legislation which will conform the regulation of such trade to the situation as developed by such an investigation; now, therefore,

Be it Resolved, That The White Cross, Inc., request Hon. Reed Smoot, a member of the Senate, to secure opportunity for hearings on Senate Bill 4085, at such time as will facilitate full representative expressions by those interested in the narcotic problem and in case further inquiry is thought advisable then Mr. Smoot is requested further to obtain a federal investigation, by a committee to be appointed for that purpose, of the narcotic situation in this country, with a view to obtaining a better understanding of the narcotic evil, and the adoption of such legislation as such an investigation will suggest.

"SAY IT WITH BRAKES AND SAVE THE FLOWERS"

"Say it with brakes and save the flowers,"
A pretty good hunch for this world of ours,
Where every one whizzes and rushes by
With a sneerful snort and a raucous cry,
Where no one's supposed to bo doing well
Unless he is riding for leather'n' hell—
Step on the gas, boys . . . into the grave,
Think of the flowers a feller could save!
"Say it with brakes and save the flowers"—
Good for the peoples, good for the powers;
Good for the man in the buzzing bus;
Good for the birds on the curb who cuss;
It's good for you and it's good for me,
One smack of a crack of a fine idee
For this speed-mad crazy old world of ours:
"Say it with brakes and save the flowers."

—J. P. McAvoy.

Book Reviews

NURSERY GUIDE FOR MOTHERS AND CHILDREN'S NURSES. By Louis W. Sauer, M. D. Second Edition. St. Louis. The C. V. Mosby Company. 1926. Price, $2.00.

In this edition the scope has been broadened to include advice and diets pertaining not only to the infant but to the pre-school child.

A MANUAL OF NORMAL PHYSICAL SIGNS. By Wyndham B. Blanton, M. D. St. Louis. The C. V. Mosby Company. 1926. Price, $2.50.

In this book the signs of disease are omitted. It is intended as a brief compilation of normal findings in healthy individuals assembled to aid students.

THE THYROID GLAND. B. Charles H. Mayo, M. D., and Henry W. Plummer, M. D. The Beaumont Foundation Lectures Series No. 4 Auspices of Wayne County Medical Society, Detroit, Michigan. St. Louis. The C. V. Mosby Company. 1926. Price, $1.75.

This work covers the subject of the thyroid gland in all its phases. The extent of work done upon thyroid disease can scarcely be comprehended by any one who has not given the subject special thought. The Mayo Clinic has been favored in having the largest group of thyroid cases ever assembled. This work gives the summary of their experience.

SIXTY YEARS IN MEDICAL HARNESS.. By Charles B. Johnson, M. D. With an introduction by Victor Robinson, M. D. The Medical Life Press, New York, 1926. Price, $3.

Dr. Johnson has already written more than one book, or monograph, upon medical life, as, for example, one upon "Illinois in the 60's," another upon "Muskets in Medicine," and still another upon "Medicine in Champagne County." In more than 300 pages he writes in an entertaining way of points in his career which he thinks will be of interest not only to those of his contemporaries who may survive, but to younger medical men as well. The book is freely illustrated with pictures which are suitable to the text, and its text defines the situation which pursued the profession of medicine decade by decade from 1802 until 1925. Sadness and joy are pictured from time to time in a telling way, and the author goes outside his immediate surroundings to write clearly of eminent medical men in various parts of the United States who stood first and foremost in their day and generation.

COFFEE DRINKING BY THE AGED

The human body with advancing age has a marked tendency to become more sensitive to stimulants such as caffein, and the excitement of the nervous centers is less well borne in senescence than in the prime of life. With age comes increased nervous irritability and the need for more repose and sleep. The use of the stimulants coffee and tea by old people is, therefore, of questionable propriety.

Professor Oliver T. Osborne recently pointed out (Medical Journal and Record, 120 (1924), supplement, CLXIII) some of the dangers that are liable to accompany a tea or coffee habit in old age. He says: "The action of caffein (on the aged) is to increase general nervous irritability, cause polyuria, and especially to stimulate the thyroid and parathyroids to abnormally increased activity, with the result of more nervous irritability and muscular irritabliity and trembling. Caffein often raises the blood pressure, where such an increase of blood pressure is not needed." He states further than coffee and tea are likely to increase the production of uric acid and that this substance is liable to irritate the kidneys and cause muscle and joint pains in old people. Professor Osborne is of the opinion that caffein-containing beverages serve no useful purpose in the case of the aged and that caffein should be entirely avoided except in instances where the therapeutic use of the alkaloid is indicated.

Dr. Malford W. Thewlis, in the second edition of his book entitled "Geniatrics," calls attention to the increased susceptibility of old people to the stimulating action of tea and coffee. He urges a curtailment of the use of these drinks in senescence. The use of caffein-containing beverages with the evening meal he considers very liable to interfere with sleep. Dr. Thewlis directs notice to the supersensitiveness which old people frequently exhibit towards certain drugs; he believes that the old rule that "children and the aged cannot stand large doses" is not without foundation. Ordinary observation shows that the aged are more susceptible to caffein than younger persons. It is not at all uncommon to hear individuals past the prime of life say they can no longer drink coffee because it keeps them awake.

Even Professor Samuel C. Prescott, who made an investigation of the effects of coffee and came to the conclusion that it is harmless for the majority of adults, says that "many individuals find with advancing years that smaller quantities (of coffee) will suffice," thus conceding that people do become more sensitive to caffein as they grow older.

It is generally known that caffein stimulates the heart's action and thus tends to raise the blood pressure. While caffein is a vaso-dilator as well as a heart stimulant, its dilating action upon the hardened vessels of the aged will be less effective than in the case of younger persons; hence the increased pressure due to the heart's action will not be compensated for by relaxed arteries, and the blood pressure will accordingly increase.

Finally it can be stated that in old age sedatives rather than stimulants, such as caffein, are called for; old people should avoid the stimulants tea and coffee, not only because they are undesirable irritants of the nervous system, but also because they have a harmful effect on the blood pressure, cause excessive uric acid production within the body, and may, as Professor Osborne points out, produce abnormal activity of the thyroids and parathyroids.—*From Mellon Institute of Industrial Research.*

Original Articles

THE MEDICAL ASPECTS OF GALL BLADDER DISEASE*

JOSEPH L. MILLER, M.D.
CHICAGO

The treatment of gall bladder disease is surgical. The diagnosis, however, is usually made by the internist, who may call to his aid the laboratory worker or the roentgenologist. It is he who usually confers with the patient and determines whether surgical interference at once is desirable or whether further observation is advisable, especially for the purpose of more fully establishing the diagnosis. He is occasionally called upon to diagnose and treat some of the post-operative complications, as massive collapse of the lung or pneumonia.

The most difficult of these tasks is the diagnosis. The greater the experience of the physician, the greater the realization of possible pitfalls. As we see patients who have had cholecystectomies and have not been relieved of their discomfort, we realize that a symptom complex resembling gall bladder disease may be simulated by other conditions. In many of these unsuccessful cases a pathological gall bladder has been found at the time of operation, evidence that the mere presence of pathology does not necessarily mean that it is giving rise to symptoms. It is the opinion of the author that the diagnosis or exclusion of gall bladder disease may be the most difficult encountered in the entire field of internal medicine. It may require prolonged observation and the careful questioning and examination of the patient after each seizure. This is especially true of those cases where the discomfort which appears periodically is mild in character. Icterus following the attack is highly significant, but not absolutely diagnostic as syphilis of the liver may give rise to severe hepatic colic followed by jaundice and yet at operation the gall bladder may appear normal. Chills and fever with liver syphilis is far from uncommon and may follow an attack of severe pain and be followed by jaundice. During my interne days, two patients with recurrent pain, jaundice, and fever were operated upon the same day by two of Chicago's most distinguished surgeons, Dr. Christian Fenger and Dr. J. B. Murphy. Both had syphilis of the liver and, as far as could be determined, no other pathology. Riedel advised that except in great urgency all patients where the diagnosis of cholelithiasis was made, be given first a course of anti-luetic treatment in order to see if a cure could be affected. This was before the days of x-ray and the Wassermann test. Provided lues can be excluded, periodical attacks of characteristic pain followed by jaundice and localized tenderness warrant the conclusion that surgery is indicated. If the x-ray adds confirmatory evidence, well and good. The VanDen Bergh test, which enables us to detect bile in the blood stream in small amounts insufficient to produce visible icterus, should be a great aid in diagnosing atypical attacks. It should be born in mind that calculi may pass into the common duct causing occlusion without pain. Here the presence of icterus and fever with local tenderness enables the clinician to localize the trouble, although not permitting him to diagnose its exact nature. Severe epigastric pain without fever but associated with a leucocytosis is suggestive of gall bladder disease, as gastric pains or spasm of the colon do not give leucocytosis. When a patient has an intense paroxysmal pain in the abdomen, it is frequently impossible for him to localize the area of greatest discomfort. He will observe, however, the radiation of pain. When the pain passes either through to the right scapula or passes around the right lower thorax, gall bladder involvement is suggested. Questioning the patient as to where he first noticed the pain at the onset, or from what area it was last tc disappear may be of value.

Biliary colic may appear any hour—day or night. Formerly it was taught that paroxysms of pain occurring during the night were suggestive of biliary colic. We know now that a duodenal ulcer is very frequently troublesome in the early morning hours. Appearance of pain after jolting, as long automobile or bus trips, suggests a biliary or renal origin and speaks against spastic colitis or peptic ulcer. The frequency of the attacks and their relation to meals is important and careful questioning on this point is essential. In fact, careful questioning is of the greatest value in diagnosis and no where more so than in establishing the diagnosis of gall gladder disease. History taking, auscultation, and percussion since the advent of

*Address before Chicago Medical Society, Jan. 20, 1926.

the laboratory is gradually becoming a lost art. If in doubt read Skoda's book on percussion and auscultation. In this particular field the history and physical examination is just as important as it was before Roentgen's discovery. Any recurrent epigastric discomfort associated with the presence or absence of food in the stomach is probably of gatsric origin. It must be born in mind, however, that it may be secondary to gall bladder disease and not a primary gastric affair. This thought is strengthened if after diet and alkalization the pain still recurs.

Palpation to determine localized tenderness made especially immediately after the acute pain subsides may supply valuable evidence. The degree of resistance and tenderness on the two sides should be compared. The so-called Murphy method of placing the second joint of the flexed finger over the gall bladder region and then striking the knuckle with the other hand is as barbarous as it is useless. Gently increasing the pressure is the desirable method. Definite localized tenderness beneath the right costal arch in the parasternal line is suggestive, not conclusive, evidence of gall bladder involvement. It is surprising the number of individuals who in the course of physical examination will show slightly more tenderness on the right side. It is scarcely probable that such localized tenderness is always indicative of gall bladder trouble. Ability to palpate a mass in this region is more suggestive, but is after all a rare finding in this trouble.

A typical location of the pain in biliary colic is interesting. During the past two years we have observed a few cases where the pain was referred to the midsternal region radiating laterally over the chest. It is not like an anginal pain and does not radiate down the arm. Its duration is longer and the pain on the whole more intense than an angina pectoris. There may be complete absence of localized hepatic tenderness. In one such patient, after careful history, physical examination, and x-ray, we were still unable to make a diagnosis. A subsequent attack with jaundice gave the clue and operation revealed a cholelithiasis. Rolleston states that a stone in the cystic duct may cause the pain to radiate downward toward the appendiceal region. I do not recall any radiation of this character. Attempts to predict the site of the calculus from the character of the pain is to say the least, highly speculative. He is a daring diagnostician who will boldly predict the nature of the pathology that will be found at operation. In speaking of atypical pain the possibility of transposed viscera should be born in mind. Several years ago the writer saw such a case, where following a previous attack of pain a surgeon had made an exploratory incision downward from the left costal arch. The patient related that the surgeon told her she had the largest spleen he had ever seen and that he tried to remove it but found it impossible.

The diagnostic difficulties are much less in that type of gall bladder disease characterized by severe paroxysms of pain than it is in the milder types without severe pain. Here gastric symptoms often predominate with at most moderate recurrent increase discomfort, difficult to distinguish from the digestive pains. This type of case tests the ingenuity of the internist and even after exhausting all means at his command, he may still be undecided between duodenal ulcer and gall bladder disease. The symptomology in this type is extremely variable and hence the difficulty in diagnosis. The gastric disturbance may be an indefinite heaviness with belching after meals, or distress may occur one-half to one hour after meals, thus resembling peptic ulcer. In my experience the pain rarely appears on an empty stomach as is frequently noted in duodenal ulcer. The early morning pain so characteristic of ulcer I have never observed. Another point not always present is the long periods, of oftentimes weeks, without discomfort and then without demonstrable cause, such as indiscretion in diet, the indigestion returns, continues a few days or weeks, and then without special treatment subsides. The patient will frequently state that he believes that this distress is only slightly modified by dietary measures or alkalies. From this symptom complex there may be wide variation, but periodicity of discomfort and failure to respond to ulcer management is a rather common characteristic.

The gastric analysis rarely throws any great light on the situation. Rolleston states that HCl is usually deficient or absent, but this is far too inconstant to be a reliable guide. The occasional relief from alkalies suggests the presence at times of a hyperchlorhydria. The continued absence of blood from the stools speaks against

ulcer, but does not rule it out. The continued presence of blood, however, is strongly suggestive of ulcer or carcinoma. Local tenderness below the arch in the region of the gall bladder and duodenum does not aid in the differentiation. The history of recurrent attacks of moderately severe pain which the patient states differs from the digestive pains is highly significant, and if associated with even moderate temperature or leucocytosis, they become of still greater value. Perhaps the Van Den Bergh test for bile may show evidence of icterus and if so, gall bladder disease becomes highly suggestive. The roentgenologists on many of these cases report a deformity of the duodenum, due either to ulcer or an adherent gall bladder—information which is of only moderate value. Occasionally the concave character of this deformity will enable them to say that gall bladder disease is highly probable. I have never been able to enthuse on a report that the x-ray shows a distended gall bladder. In two cases where such a report was accepted as evidence of pathology the gall bladder at operation was not pathological and it was later shown that the patient's trouble was a spastic colitis. It is possible that this enlargement is physiological as one of the functions of the gall bladder is the concentration of bile. Such a distended gall bladder is rather widely accepted as evidence of a pathological condition and time may show that this is true. Unless the history and physical examination is strongly suggestive of trouble, the mere presence of a distended glall bladder as shown by the x-ray is not, I believe, adequate evidence upon which to recommend surgical measures. It is in this type of case that cholecystography may be of value. It should be borne in mind, however, that the roentgenolist only detects pathology. He is not in a position to determine whether this pathology is responsible for the signs and symptoms present. He does not diagnose disease. It is the function of the internist to consider his findings and determine whether they are associated with the patient's complaint. It is essential to differentiate between innocuous pathology and troublesome or potentially dangerous pathology. In this form of gall bladder disease with indigestion, prolonged observation may be necessary before we can finally rule out a primary gastric disturbance.

We may briefly review some other diseases capable of giving signs or symptoms of biliary trouble. In my experience one of the most important is spastic colitis. In patients operated on for gall bladder disease without relief, the most frequent cause of the pain has been spastic colitis. One of the factors in this condition is nervousness, another, the taking of drug laxatives. The pain complained of by some of these individuals is apparently intense and if they can persuade the physician to give them morphine, they will demand the same treatment in the next seizure. There are certain symptoms highly suggestive of colitis—especially rumbling and gurgling in the intestines. During an unusually severe cramp the patient may notice a gurgling followed by relief of pain. Mucus in the stools is significant. The attacks frequently follow a nervous upset or the taking of laxatives. The abdominal discomfort is not always in the same part of the abdomen. On one occasion it may be in the right upper quadrant and another time below the navel. The x-ray may be of value, although a negative x-ray is of little value as the muscle spasm is not continuous. By withdrawing drug laxatives and giving a suitable diet with the addition of mineral oil and moral support and encouragement we can frequently determine whether the discomfort arises from the colon.

Another source of error is an intercostal neuritis due to osteo-arthritis of the spine. If the painful nerve lies along the lower right costal arch, the discomfort, especially in a nervous individual who exaggerates symptoms, may be and has been mistaken for a gall bladder disease. Such patients may be awakened in the night with an excruciating pain which they frequently refer to as being in the right hypochondrium. Physical examination reveals the tenderness over the arch and not below it. By changing their position in bed, they frequently experience relief. Long automobile rides or jolting may also precipitate an attack. Within the past two years I have seen two patients operated on for gall bladder disease where the pain was due to a neuritis of this character.

Differentiation from an appendicitis has not seemed to me to be especially difficult. Since reading a recent article by Dr. Sidney Lange (J. A. M. A. 1925, L. X. X. X. V., 2021), on the varying location of the gall bladder as shown by cholecystography, we can easily understand how the point of tenderness might be confused

with a high appendix. The radiation of the pain, however, is different and the suddenness of onset and intensity of the discomfort differs from that observed, with rare exceptions, in appendicitis. Perhaps this differentiation should not be dismissed so lightly as there can be exceptions to every rule.

A Dietel's crisis I have never seen, if we exclude attacks of renal colic due to calculus or infection of the kidney. In a kidney involvement there is practically always tenderness in the loin, and if rigidity is not too marked, at least the lower pole of the kidney can be palpated.

Syphilis of the liver has already been discussed.

Acute pancreatitis may resemble very closely biliary colic. As a rule the pain is more in the epigastrium and may radiate directly through to the spine. Tenderness and resistance is usually near the median line. Biliary pain is usually of rather brief duration while in pancreatitis it continues until relieved by surgery.

That a lower right lobe central pneumonia may closely simulate gall bladder disease I once learned to my chagrin. In this particular case when the patient was seen in consultation on the third day, nothing could be found in the lung. There was definite tenderness over the gall bladder region and well marked jaundice and a high temperature. There was no history of previous attacks. A surgeon was called who advised operation. The gall bladder was normal. A careful examination of the lung was again negative and not until twenty-four hours before the crisis were we able to definitely diagnose pneumonia. The x-ray is of great assistance in diagnosing central pneumonia, and it is amazing to see how large an area of infiltration may be present without physical signs.

In discussing diagnosis of gall bladder disease reference might be made to the Lyon-Meltzer method of obtaining bile. My experience is nihil due to lack of faith in the value of this method of diagnosis. In this I may be in error.

The medical treatment of gall bladder disease is of interest chiefly from an historical standpoint. We read considerable about preventive measures, and yet have great difficulty in becoming interested in their application. They fail to appeal. Stasis is, no doubt, an important factor in gall bladder disease. How to prevent stasis is, however, quite another problem and must be left to the therapeutic optimist, especially as ladies no longer wear corsets. A low cholesterin diet has been advocated as a preventive measure. To those who have faith this may be tried, removing fats, yolk of egg, sweetbreads, and brain from the diet. Removal of foci of infection with the object of preventing biliary infection is still a hypothesis and will remain so until more rational animal experimentation would lead us to suspect such a possibility and properly controlled series of patients confirm this surmise.

Active medical treatment includes certain watering places, duodenal drainage, biliary antiseptics, cholagogues, and diet. Many people believe they are temporarily benefited by a Carlsbad cure. If this is true, it would be necessary to determine whether this was due to the diet, exercise, or drinking of the waters. To those who desire a trip abroad and possibly postpone, but not escape surgery, this may be tried. The value of duodenal drainage is still a mooted question. When we consider the nature of the pathology, it does not appear rational.

Hexamathylenamin was at one time thought to be a biliary antiseptic. When Dr. Crowe did his work with this drug, there was no differential chemical test between hexamin and formalin. What he found in the gall bladder was hexamin and not formalin. Formalin is only split off in an acid medium, and, outside the stomach, the urine is the only fluid in the body capable of bringing about this reaction. Mercurochrome is the most recently heralded biliary antiseptic. It is given intravenously and causes a very severe reaction, chill, and high fever. It is not free from danger. A. V. St. George (J. A. M. A. 1925, L. X. X. X. V, 2005), has recently reported autopsy findings on a series of five cases treated with mercurochrome. Intense nephritis and intestinal lesions characteristic of mercury poisoning were found and it was the opinion of the pathologist that death was due to the mercurochrome. There is, furthermore, considerable difference of opinion in regard to its germicidal action in the gall bladder. A. T. Todd (Lancet. 1925, ii, 1017) has recently reported that the acidity of the solution determines in a large degree its germicidal activity. At acidity near to the neutral point, it has very little power. In higher acidities it is active. At the acidity

of the blood it was only slightly germicidal. When excreted by the kidney, it again becomes highly germicidal in the acid urine. Apparently in the alkaline bile, it has at most only moderate germicidal power. If time shows that it is a valuable biliary antiseptic, the dangers attendant upon its use would prevent its general adoption.

It was formerly thought that certain purgatives had a cholagogue action, increasing the flow of bile. This view has been shown to be fallacious. Salicylates at one time were thought to facilitate the flow of bile. This also has been shown to be without foundation. The only drug capable of increasing the flow of bile is ox bile, and ox bile may be used for this purpose. The nature of the pathology of the diseased gall holds forth little hope that increasing the flow of bile would be of much value. Beginning two to three hours after a meal there is an outpouring of bile into the duodenum. This can be modified somewhat by the character of the diet. Nitrogenous foods, it is reported, stimulate a greater flow than fats or carbohydrates. In order to establish more frequent flushing five meals a day instead of the usual three can be recommended.

As the internist has little to offer in the way of therapy in gall bladder disease, having made the diagnosis and decided that active treatment is indicated, he should refer the patient to the surgeon.

SOME PHASES OF BILIARY SURGERY*

WILLIAM P. HERBST, M. D.
MINNEAPOLIS, MINN.

In the present era of epoch making discoveries and advances in our knowledge of human physicochemical processes and new chemical laboratory tests, one has difficulty in keeping abreast of the times and evaluating these various tests for use in his own problems. The tendency of the more recent medical graduates to become clerks in collection of the results of various laboratory procedures and of the older men to depend too much on their senses and experience is unfortunate and it is to be hoped that an ideal which calls for the use of both laboratory investigation and keen judgment and observation may be attained.

*Read before Knox County Medical Society, at Galesburg, Ill., April 15, 1926.

It is with this idea in mind that I have brought together in part of this paper the relations of certain physiological processes of the biliary system to some of the present day methods of investigation, that they may be understood and made use of by us all, when indicated.

The liver, one of the largest organs in the body, probably has many functions which we have not yet discovered. Some of the generally accepted functions follow: It secretes bile at the approximate rate of an ounce an hour. It stores carbohydrates in the form of glycogen which it releases in quantities sufficient to keep the amount of blood sugar between certain normal percentages. It takes part in the protein metabolism in the development of aminoacids and urea. Fats are also handled in the liver and the formation of cholesterol is part of this process. It absorbs and renders harmless toxic substances from the intestinal tract, the spleen and the general circulation.

The gall bladder, which receives but a small portion of the total quantity of bile secreted, concentrates the bile and secretes mucus. There are many other more or less complicated functions of the gall bladder which are not definitely proven. Removal of gall bladder is always followed by dilatation of the biliary tree except when the sphincter of Oddi is not competent.

The formation of the bile pigment bilirubin, which is the constituent of the bile which gives it its color, takes place in the liver, bone marrow and spleen, all important parts of the reticulo-endothelial system. The worn-out red blood cells are destroyed and the hemoglobin is broken down into its constituents of which bilirubin is one. This bilirubin is then excreted by the liver as the pigment portion of the bile. Jaundice is a condition in which the blood contains much more than the normal amount of this pigment bilirubin with a resulting pigment deposit in the various tissues of the body. There are three types of jaundice, 1. hemolytic, such as in hemolytic icterus; 2. obstructive, as in common duct obstruction, and 3. inability of the liver parenchyma to secrete and excrete, due to acute infections, certain poisons and pathological impairment of liver cells. Severe jaundice affects all the tissues of the body and one of the most important of these is the kidney. The kidneys

early give evidence of the effect of jaundice by the presence of albumin in the urine, an elevated blood urea and a lowered phenolsulphonphthalein test. The physiological acting calcium content of the blood, so important in the process of blood coagulation, is lowered due to the combination of the bile salts with the circulating calcium.

The clinical tests I wish to consider are the levulose, the van den Bergh, the Fouchet, the Rosenthal, the Munlengracht, the glycuronic acid, blood urea, blood cholesterol and the recent method of cholecystography developed by Graham and Cole. Before going on I wish to digress in order to sketch the development of the dyes used in the Rosenthal and Graham and Cole tests.

Roundtree and Abel while studying phenolphthalein noted that it was excreted in the urine and bile. When a sulphone radical SO^2 was substituted for the CO it was found that this new substance phenolsulphonphthalein, which is theoretically the same size as the urea molecule, was excreted quantitatively in the urine, resulting in the now popular kidney function test. Later they discovered that by replacing four hydrogen atoms in the phenolphthalein group by chlorine, the new compound phenoltetrachlorphthalein was excreted quantitatively in the bile. The present Rosenthal test for liver function developed from this. Graham and Cole found that when bromine or iodine were substituted for chlorine, the resultant compounds were also excreted in the bile and that this bile was opaque in the x-ray, thus laying the foundation for the present methods of cholecystography. And now Graham, Cole, Copper and Moore report a compound, sodium phenoltetra-iodophthalein which offers the possibility of being able to do a kidney function test, a liver function test like the Rosenthal and cholecystography by the administration of a single substance.

The levulose test is based on the liver function of carbohydrate storage and the maintenance of the blood sugar between one and two-tenths of one per cent. This test has not proved of practical value and is made unreliable in the cases in which certain pancreatic pathology exists.

The amount of the circulating bile pigment bilirubin which is dependent upon the rate of red blood cell destruction and the rate of liver excretion, may be estimated quantitatively by two methods and qualitatively by one. The bile index test of Munlengracht is quantitative only and does not indicate whether hyperbilirubinemia is due to biliary obstruction and liver insufficiency or to hemolytic processes. While this test may be used, it is not as satisfactory as the van den Bergh. The van den Bergh estimates the amount of bilirubin circulating in the blood and also indicates whether a hyperbilirubinemia is due to hemolytic conditions or to conditions of liver damage and liver obstruction. Ehrlich's diazo reagent is used in this test and the reaction is classified direct or indirect according to whether the color appears without or with the addition of alcohol. A direct reaction indicates biliary obstruction or pathology and an indirect reaction indicates a hemolytic condition if the amount is increased above the normal. The normal amount of serum bilirubin has been estimated between .5 mg. to 2.0 mg. per 100 c.c.

In obstructive cases the amount of serum bilirubin may rise as high as 30 mg. per 100 c.c. Now the question presents itself as to what will the reading of the test be in cases in which there is both direct and an indirect reaction. The result will be that the total amount of serum bilirubin will be read as an indirect reaction with no means of determining how much is due to hemolysis and how much is due to liver damage or obstruction. Now what is the value of this test? As an aid in differential diagnosis it serves to differentiate between conditions which result in increased hemolysis such as hemolytic icterus, pernicious anemia, etc., on the one hand and the group of biliary pathological conditions such as obstruction, and liver parenchyma damage of various kinds, on the other. As an aid to the surgical indications in jaundiced conditions it has proved of the most value. By noting the daily amount of serum bilirubin one can feel that an increasing amount of pigment indicates an increasing surgical risk and vice versa. Is it of any value in the diagnosis of non-jaundiced chronic gall bladder conditions? No, it is not. It will show an increased reading before coloring of the sclera and skin appears in cases of obstruction, however.

It has been found that in cases with prolonged obstructive jaundice in which considerable parenchymatous liver damage has undoubtedly taken place, that relief of the obstruction is followed by an immediate improvement in both

the van den Bergh and Rosenthal test. After this initial improvement, the Rosenthal test takes a long time to gradually return to normal, whereas the serum bilirubin continues rapidly to normal. This observation has been interpreted to indicate that although the liver is able to keep the pigment normal it still has not been restored to its full secretory ability owing to a slowly clearng up parenchymatous damage. It is of interest to know that it is esimated that the liver carries a reserve functional ability of about 70 per cent. In hemolytic conditions with a large amount of serum bilirubin of an indirect reaction, a normal Rosenthal test is corroborative evidence of hemolysis with little or no liver damage. Another use for the van den Bergh is its value in indicating the time of removal of common duct drainage. If the test is above normal it can be interpreted as indicating that it is too early to remove drainage.

The Rosenthal test which has been developed by estimating the amount of the dye in circulation one-half hour after intravenous injection can be used alone or in conjunction with the van den Bergh as previously described. In obstructive jaundice cases the retained dye is great whereas in the hemolytic jaundice cases, the retained dye is practically normal in amount. The greatest use of this test is in the cases in which liver disease is suspected but with no jaundice, in such cases as malignancy, cirrhosis and mycocardial insufficiency. In cases of total obstruction it is of no value as a daily indicator of liver sufficiency, such as the van den Bergh is.

The Fouchet test is an oxidation test which is read positive or negative according to presence or absence of the development of a green color. A positive reaction was supposed to indicate cholecystitis and a negative the absence of cholecystitis. If this test could only have been accurate and reliable it would have solved completely one of our greatest problems of gall bladder diagnosis of today. This was not to be, however, for such investigators as Speik, Liljedahl, Falk and Garvin have found it too unreliable to be of any diagnostic aid.

The glycuronic acid test is supposedly an indicator of the ability of the liver to detoxicate the blood. It is of interest scientifically but is not of sufficient practical value to be used.

The estimation of the amount of urea in the blood is of value in checking up the renal function which may be early diminished in severe jaundice. Urea has been proven to be formed in the liver as an end result of protein metabolism. The amount of urea present is not an accurate indicator of the liver sufficiency but is of value in estimation of the surgical risk, because the renal function is of prime importance in all jaundiced cases.

The determination of the cholesterol content of the blood is also of scientific interest. Many men accept the formation of some cholesterine stones as a metabolic process not necessarily associated or dependent upon infection. Practically this estimation is of value only in the handling of cases from a prophylactic or dietary standpoint.

A most recent and valuable aid in diagnosis presents itself in the form of the now popular method of cholecystography. The technique varies according to the technician but the fundamental principle is the same in all. The first question which presents itself in the widespread use of any diagnostic procedure is the danger of its use. There are varying degrees of reactions to the administration of the dyes but none of sufficient severity to contraindicate its use except in extremely weak patients. I know of only one fatality following the use of the dye and that was not particularly conclusive in proving that the dye was the sole factor. Summers of Omaha at the last Western Surgical Meeting reported the case. A patient who had had an intravenous iodine salt test was operated upon six days later and died three days postoperatively of thrombosis of the axillary and femoral arteries. Dr. Summers felt that mitral thrombi had been formed from the dye and that the operation might have been indirectly responsible for this dislodgment and metastasis. On the strength of this experience he advises waiting two weeks before surgery in intravenous cases. On the other hand, Graham and others have reported thousands of cases with no fatality traceable to the use of the dye. It would seem that this one case should hardly contraindicate the use of this test whenever indicated.

The use of the bromide salt by mouth has resulted in fewer reactions than the iodine salt, according to Carman's experience. Graham uses the iodine salt both in the oral and intravenous methods. Carman uses the oral method rou-

tinely and follows up with the intravenous method in unsatisfactory cases. Graham claims an accuracy of 95% in his use of the test. Carman's experience is not quite so satisfactory. The cases in which stones are demonstrated are the only cases in which the test may be considered 100% accurate. In other cases in which the diagnosis has been gall bladder disease operation has resulted in the finding of normal gall bladders in a considerable number of cases. Again, in cases reported negative, operation has demonstrated well advanced gall bladder pathology. At the present time, then, I think we have to conclude that the demonstration of stones is the only positive phase of the test. The other reports have to be applied in the same way in which we apply so many diagnostic tests, that is, on a percentage probability basis. The definite demonstration of stones is of the most value in those cases which do not have a definite syndrome and on whom we would not ordinarily advise or urge surgery, even as an exploratory procedure. This applies particularly to the large group of cases in which the nervous status of the patient may play a large part. The test is obviously not indicated in obstructive cases. Should this test be used in all gall bladder cases? It would seem that in many clear cut clinical gall bladder cases that it would not be necessary, leaving its field of application to those cases in which we can not make a reasonably satisfactory clinical diagnosis. For those who wish it, however, I can see no reason for advising against its routine use. It must be admitted that it is without a doubt the biggest diagnostic aid so far developed in the diagnosis of the general run of gall bladder cases and particularly so in the cases with demonstrable lithiasis.

Besides the consideration of these clinical diagnostic procedures the urgency of early surgical interference in gall bladder pathology and lithiasis, the aids in management of jaundiced cases and the recent application of medicinal therapeusis in certain cases of cirrhosis with ascites, appeal as practical questions of the hour.

Surgical attack is always indicated in lithiasis cases unless the patient is too bad a risk to stand for any surgical procedure, however slight. In the cases of cholecystitis without stones there are two questions to be answered:

1. How long should we wait before urging surgery and what preliminary, palliative and in some cases curative measures are to be instituted?

2. What are the hazards of waiting?

Probably no two would agree on the answer to the first question. In the average case of chronic cholecystitis I feel that a trial of a year's management consisting of dietary measures, removal of infectious foci, the administration of salines and other cholagogic medicines and the non-surgical duodenal drainage of the biliary tract by those who practice it are indicated. An acute febrile attack with jaundice or signs of local peritonitis would call for emergency procedures if progressive and later interval surgery if it is a self-limited attack.

After a year's period of management along these lines without cure or improvement, I feel that surgical interference is most certainly indicated, mainly because of the following hazards of waiting:

First the important hazard is the probability of the development of pancreatitis, hepatitis and biliary cirrhosis, which so frequently become part of the pathological picture in gall bladder infections. I do not believe these things can be emphasized too strongly, because first we are living in an age of developing prophylaxis and secondly because it is the persistence of these very conditions of pancreatitis, hepatitis and biliary infection, after gall bladder surgery, that brings popular discredit and disatisfaction on surgical removal of the infected gall bladders.

Next in importance I would mention the possibility, though comparatively slight, of the development of an acute condition with peritonitis which calls for emergency surgery.

Besides these reasons I wish to mention the relationship of cholecystitis to a few pathological conditions. The relationship of ulcer development is not clear but it does occur in a considerable number of cases. The possibility of the development of traction diverticula of the duodenum, biliary fistula, and obstruction of the stomach, as direct result of extension of the chronic inflammatory process in the gall bladder is always at hand. The possibility of the development of arthritis, iritis, and the early development of vascular sclerotic changes anywhere as a result of the role the infected gall bladder may play as a focus of infection, is also always at hand.

The relationship of cholecystitis to diabetes is

not definite, but whether the cholecystitis acts as the etiological factor in the development of diabetes or not, the fact remains that marked improvement and in some cases cure of diabetes is accomplished in a large percentage of the cases of coexisting diabetes and cholecystitis in which cholecystectomy has been performed.

Such conditions as myocarditis with, in some cases, well developed angina pectoris are definitely benefited by removal of an infected gall bladder in a large enough number of cases to urge cholecystectomy in selected cases.

The development of the above conditions I feel offers a very persuasive and imperative argument for the early eradication of persisting gall bladder infection.

Jaundice, although always a source of increased surgical risk, has lost some of its hazards through the development of the aids in its management which follow:

1. The ability to better estimate the degree of hepatic sufficiency by means of the van den Bergh, Rosenthal and blood chemistry tests.

2. The preoperative administration of calcium chloride intravenously to replace the calcium which has entered into chemical combination with the increased circulating bile salts, has greatly reduced the occurrence of uncontrollable hemorrhage, which used to be the cause of death in nearly fifty per cent of the cases in which operation preceded death. Transfusion in cases in which satisfactory reduction in the coagulation time is not attained by the calcium therapy. Transfusions also form our last bulwark of defense in the postoperative hemorrhages which sometimes resist all other methods of hemostasis.

3. The use of glucose preoperatively and postoperatively in cases with liver insufficiency.

4. The different methods of preserving body heat during operation. The development of the use of the above methods in the handling of badly jaundiced cases has made a brilliant chapter in the progress of biliary surgery.

The use of novasurol and ammonium chloride in cases of cirrhosis of the liver with ascites is another new development in the management of these conditions. In some cases a tremendous amount of ascitic fluid has been removed by this therapy and an individual otherwise doomed to chronic invalidism or possibly fatal surgery has been restored to active productive existence.

The method of administration of this mercury compound is either intravenously or intramuscularly. The drug comes in ampoules of a 10% solution and ¾ c.c. is used as a trial dose to test out the patient's reaction to it. If it is well tolerated, doses of 1 to 2 c.c. are given at intervals of from three to four days. Along with this, a lowered fluid and salt intake is maintained and the administration of ammonium chloride in capsules to the amount of 10 gms. daily has been shown to be of help in some cases. This method of treatment has been so spectacular in some cases that it at least deserves a trial before we fall back on such surgical procedures as the Talma Morrison and splenectomy as they are indicated.

SUMMARY

1. The van den Bergh test is a very valuable indicator of a jaundiced individual's status as a surgical risk. It is also of much help, either alone or in conjunction with the Rosenthal test, in the differential diagnosis of jaundice due to biliary or hemolytic pathology.

2. The Rosenthal test is of most value as an indicator of the status of hepatic parenchyma sufficiency and also is of value in conjunction with the van den Bergh test as just mentioned.

3. Cholecystography is 100% accurate when it demonstrates stones. Its greatest value is in cases of gall bladder disease plus stones, when a positive clinical diagnosis cannot otherwise be made. Its use is contraindicated in obstructive jaundiced cases.

4. "Gall stones" is a definite surgical indication at any time except when surgery of any magnitude would be obviously fatal.

5. Surgical interference is indicated in cases of cholecystitis which do not respond to nonsurgical management over a period of a year.

6. The use of the van den Bergh and Rosenthal tests, the calcium therapy, transfusions, glucose administration, and different technical improvements have greatly reduced the operative mortality in surgical procedures in jaundiced patients.

7. The use of novasurol and ammonium chloride in certain cases of cirrhosis with ascites opens up the possibility of medical management and control in many of these otherwise hazardous and hopeless cases.

CHOLECYSTITIS WITH A CONSIDERATION OF SOME OF THE ASSOCIATED PROBLEMS*

E. STARR JUDD, M.D.
ROCHESTER, MINNESOTA

Some years ago it was assumed that all of the essential facts regarding surgery of the gall bladder had been settled and all that remained was to develop the artistic performance of the operation. Recent studies on the physiology of the liver and the efforts to perfect a method of estimating hepatic function and to determine whether the liver is simply an excretory organ or takes part in secretion as well, have brought renewed interest to all of the surgical problems associated with this organ. Although the liver performs an important function, it has been shown that an animal can survive its removal, and that, contrary to expectation, the animal gradually becomes jaundiced after hepatectomy. It has also been shown experimentally that the removal of the greater portion of the organ apparently does not produce any change in the results of the tests for hepatic function. If a portion of the liver is removed a very decided cellular hypertrophy of the remaining portion occurs within a few days. If a rather small piece of hepatic tissue is separated from the body of the organ and allowed to lie free in the peritoneal cavity, the animal will die in a few days; the exact cause for this has not been explained. It is found at necropsy that the fragment has practically disappeared and that the peritoneum is very red and inflamed, a condition similar to that seen in some cases of pancreatitis. This experimental reaction may explain what has been called liver shock and certain symptoms that occasionally follow operations on the gall bladder in which the liver is unavoidably injured. This may mean that if a piece of liver is almost separated during an operation, it probably will be best to remove it rather than attempt to save it by suturing it back in place.

Studies of the intrahepatic, vascular and biliary trees recently made by McIndoe and Counsellor, have provided the best method so far for graphically depicting the normal and abnormal conditions which may occur in the liver. They say that the method of investigating sclerosing and obstructive processes by colloidin injections and corrosion is particularly applicable to the liver. This same plan of study has been carried out on the kidney by Hinman and Brown, and on the thyroid by Terry and Delamere. It has also been used by Huber and a number of others. The particular method used by McIndoe and Counsellor was devised by Morrison, Hinman and Brown, with some slight modification.

The gall bladder undoubtedly has some definite functions, but just what they are has not been determined. Certain animals have gall bladders while others do not. In some species, one animal may have a gall bladder while another may not, and yet they live in much the same environment and on the same foods. When the gall bladder is wanting the common duct is usually larger and shorter, and there is usually no evidence of sphincter activity at the termination of the duct so that the bile flows continuously from the liver to the intestines. Extensive studies have been carried out to discover the structure that carries on the function of the missing gall bladder. It has been suggested that the parietal sacculi of the intrahepatic ducts may become enlarged and filled out and so take the place of the gall bladder. It has also been suggested that when the gall bladder is removed at operation or destroyed by disease, these inactive embryonic structures connected with the intrahepatic ducts open up and become active, taking over the function of the gall bladder. In studies of the effects of removal of the gall bladder which were made a number of years ago, and recently by a newer method, by McIndoe and Counsellor, very little difference if any could be found in these saccules before and after the removal of the gall bladder. In partial or complete obstruction, however, definite enlargement could be detected practically proportional to the amount of dilatation of the ducts themselves.

The gallbladder is too important a structure to be sacrificed needlessly and yet there are no evidences that its removal or destruction has any untoward effect. We have shown experimentally and statistically that an animal or a human being will probably live just as long and just as comfortably without a gall bladder as with one. Some time ago we called attention to the changes that occur when the gall bladder is removed, dilatation of the bile ducts and overthrow of the sphincter activity at the ampulla, with the

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resultant loss of pressure in the bile flow. This condition exists normally in animals without a gall bladder. From the work of Rous and McMaster we know of one definite change in the bile that results from its stay in the gall bladder, that is, it becomes more concentrated. While, as suggested, the gall bladder may be a storage organ or a tension bulb, these functions have not been proved. Higgins has found that in the rat which possesses no gall bladder, a plexus of fine biliary channels is applied to the radicals of the portal vein. Since no such arrangement is found in the mouse, which has a gall bladder, he sees a possibility of the plexus being a compensating mechanism analogous to the gall bladder. While nothing has been proved by this study, nevertheless, so far as I know, this is the first time that attention has been called to the existence of such a plexus, and it is hoped that further study may lead a considerable way towards solving the problems of function of the gall bladder.

I believe that we are called upon to operate for cholecystitis or an allied condition more often than for any other abdominal disease. Not only is disease of the gall bladder recognized more often than formerly, but I believe it occurs more frequently than it did years ago. The etiology of cholecystitis has been studied from practically every angle and many different ideas have been brought forth, but the exact cause has been difficult to determine. It was quite natural to assume that the most common cause of cholecystitis was infection and it is likely that infection does play an important part. In some of the earlier reports of the bacteriologic study of gall bladder disease, bacteria were found in higher percentage than we are able to obtain at the present time. It is possible that we are operating in the presence of less inflammation and in the interval more often than formerly, but again it must be said that in some of the cases in which the gall bladder appears to be extensively diseased, no organisms are found in the tissues, in the bile or stones.

A study of 100 cases of cholecystitis has just been completed. After surgical removal, the gall bladder placed in a sterile dish and covered with sterile gauze, was immediately taken to the laboratory for culture. In no instance was the specimen examined by the bacteriologist later than five minutes after its removal from the body. Specimens from the wall of the gall bladder, from the bile, and from the stones which were present in 50 per cent of the cases, were examined in each case. Several different media were innoculated in each instance and examined at stated intervals. In spite of the utmost care, contamination undoubtedly occurred at times. In most instances appendectomy had preceded the cholecystectomy and from this source the gall bladder was inevitably soiled at times. This probably accounts for much of the contamination even though the specimens were washed one or more times in sterile solution of sodium chlorid. The examination of the tissue of the wall of the gall bladder gave a positive result in twenty-nine cases. This is subject to error, however, as three specimens showed two or more types of organisms. Only five of twenty-two specimens of "strawberry gall bladder" gave positive cultures. In 7 per cent of the 100 cases the bile was bacteriologically positive; in three of these streptococci were found and in three a spore-bearing bacillus. Gall stones were present in fifty of the 100 cases; in only five instances were we able to obtain a positive culture from the stones, and one of these might have been due to contamination. We were unable to isolate *Bacillus typhi* or *Bacillus paratyphi*, although in 21 per cent of the cases there was an antecedent history of typhoid fever. Mentzer has pointed out that thick dark green bile as found at necropsy is not necessarily indicative of infection of the gall bladder, and there are several instances in this series that support that contention. We found thick, dark colored bile in 16 instances; 6 of these were in cases of chronic cholecystitis, in 4 of which culture of the bile and of the gall bladder wall was negative. Likewise in 8 instances of gall stones, culture of the bile, gall bladder wall and stones was negative in seven. In one instance of "cholesterosis" in which thick, dark bile was found, no growth could be obtained from the bile or the contents of the gall bladder.

During the study of the effect of Dakin's solution administered intravenously, Mann showed that the tissues of the gall bladder were the first to be changed, and that a definite non-bacterial cholecystitis could invariably be produced by the intravenous administration of this solution. Under these conditions the gall bladder became very much reddened and tense, and there was an

extravasation of blood from the capillaries into the tissues. This occurred a short time after the solution had been injected, and when no change could be demonstrated in any of the other tissues. Churchman and his associates, working in the Research Laboratory of Bellevue Hospital, New York, on failure to find organisms in certain grossly inflamed gall bladders removed at operation, came to the conclusion that the pathologic condition is due to changes in the blood vessels and causes other than bacterial invasion. Sweet and Mentzer believe that the presence of lipoid deposits in the gall bladder in association with the condition known as "strawberry gall bladder," is evidence of the role of the gall bladder in the metabolism of fat, and that these lipoids are not the result of infection. While it is very likely that several factors enter into the cause of cholecystitis, nevertheless, it is more evident than formerly that some of these diseases occur independently of bacterial invasion. It is entirely possible that in some instances the cause of the condition may be chemical alteration of the blood.

The clinical manifestations are usually definite. The principal symptom is pain, usually severe, of sudden onset, radiating characteristically to the back and the shoulders. When this symptom is present the diagnosis is almost certain, but much uncertainty attends an attempt to diagnose chronic cholecystitis in the absence of colicky pain. Soreness, tenderness, constant dull pain, dyspepsia particularly evidenced by belching and flatus, and many remote symptoms, may result from chronic inflammation of the gall bladder. Since it has been shown many times that the infected gall bladder may be a focus for systemic infection resulting in rheumatism and cardiovascular disease, it is important that chronic cholecystitis should be recognized. Willius has shown that in 55 per cent of the cases of cardiovascular disease with which cholecystitis is associated, definite benefit and modification of the cardiac symptoms will follow removal of the diseased gall bladder. A surgeon is in an embarrassing situation when he finds on opening the abdomen that the gall bladder has a normal appearance, though he had every reason to believe there would be definite evidence of disease in the organ. Undoubtedly this is at times the result of a mistaken diagnosis. In others, however, unrecognizable disease exists, which will be relieved by removal of the gall bladder. The cause of the symptoms may possibly lie in the liver or the pancreas or in some functional disturbance in the biliary tract. Under normal conditions when the bile and gall bladder wall are normal, the gall bladder has a blue appearance. Sometimes a deposit of fat under the peritoneal coat gives it a much lighter color but this is not likely to be significant of disease. Inflammatory adhesions can usually be distinguished from the peritoneal fold extending from the gall bladder to the duodenum. In studying the conditions of inflammation we have formerly given a good deal of attention to the tension of the gall bladder and have thought that a tense, noncompressible gall bladder was indicative of cholecystitis. This assumption is undoubtedly correct to a certain degree, but nevertheless we know from recent investigations by Boyden of Harvard that the gall bladder becomes very tense at certain times according to the amount and kind of food that has been taken. Boyden has shown by experiments on animals that a regular cycle takes place and that after a period of starvation the gall bladder is always tense. It is probable that the tenseness that we frequently find and have been inclined to attribute to inflammation, may be the result of the starvation that usually occurs before operations on the gall bladder.

I believe that we have recently demonstrated that a diagnosis of cholecystic disease can be made on the clinical manifestations alone. This is a dangerous attitude to take, as a general rule, because most operative procedures that have no sounder justification have failed. In the last few years I have been interested in studies of two groups of cases to determine the end results of operations for chronic cholecystitis without stones. The classification of the grade of cholecystitis is that made by the pathologists and all specimens were diagnosed and graded immediately after operation. The case histories have been reviewed and followed up by questionnaires. One of these series consists of a group of 100 cases and the second is a group of 300 cases. I learned from this study that if a patient has a typical history of cholecystic disease with characteristic colicky pain, he would be relieved of his symptoms by removal of the gall bladder whether or not it showed recognizable disease. This study furthermore seemed to indicate that

in cases of cholecystitis, grade 1, in which the clinical manifestations were definite but the disease unrecognizable at the operating table, cholecystectomy was followed by cure in a higher number of instances than in the cases in which the disease of the gall bladder was graded 2, 3 or 4. The study furthermore showed that if the patient's symptoms were of the chronic dyspeptic type or if the predominant features were soreness, tenderness, and aching in the side, the likelihood of cholecystectomy promoting cure was not great. It has formerly been thought that in a large proportion of the cases symptoms of dyspepsia were the result of cholecystic disease. While this is undoubtedly true, nevertheless, the removal of the gall bladder for chronic dyspepsia gives a small proportion of satisfactory results. It is greatly to be hoped that diagnostic accuracy will be enhanced by the use of the Graham-Cole method of roentgenologic examination. Until the method was evolved very little help was obtained from the roentgen ray. Certain roentgenologists and others have expressed the opinion that they will be able to recognize the presence of disease in the gall bladder more accurately by this method than the surgeon can by exploratory operation. While this places a good deal of responsibility on the roentgenologist, the very fact that many patients have been cured of their symptoms by removal of a fairly normal looking gall bladder affords some justification for this opinion. There is either some unrecognizable disease in the gall bladder or else its removal produces some change in the liver or pancreas, which relieves the symptoms. There are many possibilities for error in the new plan of roentgenologic examination in these cases, and the stage has not yet been reached where a diagnosis can be made by this method alone.

The important problem is the development of a plan for more accurate diagnosis of cholecystitis. The results of operation in these cases are very satisfactory as a rule and the operative risk is low. A much more serious affair exists when the disease becomes complicated with biliary cirrhosis resulting in jaundice or inflammation of the pancreas. The progress made recently in the handling of jaundiced patients can be attributed largely to the efforts of McNee who gave a more workable classification of jaundice than we formerly had, and to that of van den Bergh, Aschoff, and Mann, from whom we have learned how to estimate the degree of jaundice and much about the physiology of the liver. It has been known for many years that calcium had certain effects upon the coagulating time of the blood in cases with jaundice. It has been used for this purpose for a long time, but it is only since Walters made a scientific study of how to use it, that a great deal of benefit has been derived from it. The knowledge of how to estimate the degree of jaundice and how to use calcium and an occasional blood transfusion in these cases, has reduced the mortality from almost a prohibitive level to one which holds a good deal of promise for patients in this serious condition. Something will eventually come from the tremendous effort that is being put forth on the study of the liver functional tests, but up to the present, surgery has not derived much practical benefit from these studies. By all odds the most important test of the patient's condition is the van den Bergh test for the amount of bilirubin in the blood serum. This shows the exact degree of jaundice; repetition of the test indicates whether the jaundice is increasing or decreasing. It thus enables us to determine how much preparation is needed and what the risk of the operation will be.

There is no abdominal operation that requires as much exposure as one on the gall bladder or gall ducts. The best exposure can be obtained by a fairly large incision which begins at the ensiform and terminates a little to the right of the umbilicus. The important feature of this incision is that it should be high with the upper end close to the ensiform. The suspensory ligament can be divided without interference and many times this should be done, as it affords not only better working space but a fixed point on the liver which enables one to lift the liver up and retract the under surface. There is no question in my mind but that it is much safer and better to perform cholecystectomy by beginning the operation at the cystic duct end of the gall bladder than by starting at the fundus. There is an occasional case in which the lower end of the gall bladder and cystic duct cannot be isolated, in which it may be better to start the dissection from above. After the gall bladder has been removed, the cystic duct and artery should be ligated and dropped back away from the surface of the liver, and, if feasible, the gall bladder fossa should be covered with peritoneum. Up

to within a few years ago it was customary to leave an abdominal drain in all of these cases whether or not there was any infection, or question as to the accuracy of the technic. I have been very much impressed with the results in cases in which closure was made without one. I made this technical change very gradually, but after having closed several hundred cases without drainage, I am convinced that in the clean case in which the cystic duct is accurately tied and oozing absolutely controlled, it is a safer and better procedure. The statistical studies I have made of our own cases would indicate or seem to prove this contention.

In cases in which jaundice is an associated condition, operation can be carried out with less risk if the abdominal wall is blocked with novocain and ethylene used as the general anesthetic with as little ether as possible. In cases of deep jaundice it is usually best not to remove the gall bladder unless it can be done with very little disturbance to the surface of the liver. If that is opened into, considerable oozing follows, and the more these cirrhotic livers are sutured the more profuse the oozing becomes. The result is that the wound has to be closed with the gall bladder fossa packed with gauze, which is a bad procedure if it is possible to avoid it. It is essential to control all oozing when the patient is jaundiced.

From the investigation of all of these problems concerning hepatic function, the work that is being carried out enthusiastically by many investigators, from the work that is being done to facilitate a better conception of disease of the gall bladder and bile tract, and from the technical improvements (preparation of patients for operation and better after-care), much progress can be expected in the treatment of cholecystic disease, in spite of the fact that a few years ago it was often said that there was nothing more to be learned about gall bladder trouble.

THE DIAGNOSIS AND TREATMENT OF THE MOST FREQUENT TYPES OF GOITER

MARSHALL S. UNDERHILL, M. D.
EVANSTON, ILL.

My experiences in the diagnostic goiter section of the Mayo Clinic, as a "Fellow in Surgery," together with experiences in private practice, illustrated by the following case, have led me to the conclusion that goiter conditions are frequently diagnosed wrong. Failure to make a correct diagnosis usually means improper treatment.

Report of Case. Mrs. W. S. phoned me stating she was going to the Mayo clinic because of a goiter and asking me for letters of reference. She had recently received a variety of opinions as to the condition of her thyroid gland. Two doctors informed her she had a goiter and advised her never to have it operated upon. One other doctor told her she had a goiter and advised immediate operation.

She was referred to Dr. F. A. Willius at the clinic. The special findings in the case were as follows:

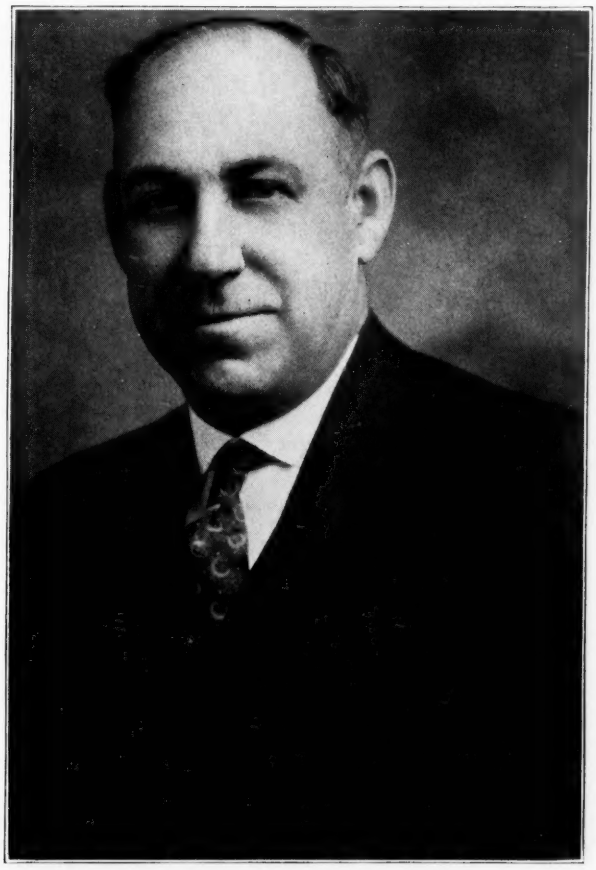
The systolic blood pressure was 122 and diastolic 78. The analysis of a 12-hour specimen of urine showed an excretion of 550 c.c., specific gravity 1.025, acid reaction and albumin 1 (on a basis of 1 to 4). The blood count showed the hemoglobin to be 73 per cent. and leucocytes 9,100. The blood Wassermann was negative. The ear, nose and throat examination showed the tonsils to have been operated upon but there were remaining tags on both sides; the ears and nose were negative. The x-ray of the chest showed rather marked bronchial thickening of both upper lobes. The electrocardiogram gave a rate of 100, sinus tachycardia, right ventricular preponderance and inverted T wave in derivation III.

A diagnosis of cardiac neurosis was made and more rest, relaxation and assurance advised in her management.

These experiences have prompted me to attempt to stress old facts, and yet, apparently unfamiliar ones, pertaining to the thyroid.

Many classifications of goiter have been suggested. They have been divided into two groups, those with hyperthyroidism and those without hyperthyroidism. Some hold there are only three definite types of goiter, colloid, adenomatous and exophthalmic, and that all other types seen clinically are either variations or combinations of these three. Then, again, they have been divided into adolescent goiters, mechanical goiters, toxic goiters, inflammatory goiters and malignant goiters. Plummer's[1] classification of thyroid disease into nine distinct diseases is a complete, simple and practical grouping. He recognizes: 1, diffuse colloid goiter; 2, adenomatous goiter without hyperthyroidism; 3, adenomatous goiter with hyperthyroidism; 4, exophthalmic goiter; 5, myxedema; 6, cretinism; 7, myxedema of childhood; 8, thyroiditis, and 9, malignant disease of the thyroid.

I shall confine my discussion to the first four conditions, as they are the ones most frequently



MATHER PFEIFFENBERGER, M. D.

PRESIDENT, ILLINOIS STATE MEDICAL SOCIETY, 1926-1927

met with and where the error in diagnosis and treatment is most often made.

Diffuse Colloid Goiter. Diffuse colloid goiter is a condition of the thyroid gland where the general contour of the organ remains the same except it is enlarged. It is characterized by an excess of colloid in the acini and is unassociated with symptoms of hyperthyroidism. Many patients with diffuse colloid goiter have increased vascularity of the gland and very frequently one finds thrills and bruit. On palpation the gland has a soft, spongy feel and should be readily distinguished from the exophthalmic goiter, which is rather hard. If the symmetric enlargement occurs in a nervous unstable person a mistaken diagnosis of exophthalmic goiter will often be made unless one takes advantage of the basal metabolic rate which is of great value in distinguishing these cases because the rate is not only not persistently elevated in the diffuse colloid goiter, but is most often somewhat below normal. In exophthalmic goiter, with rare exception the basal metabolic rate is above normal.

Patients with diffuse colloid goiter are greatly benefited by the administration of iodin, thyroid extract and thyroxin. Marine[2] has definitely proved that iodin insufficiency is the important etiological factor in these cases. Failure of the goiter to respond to treatment indicates that the enlargement is probably not a typical diffuse colloid goiter. Operation in this type of goiter is indicated only if the gland becomes extremely large and does not respond to treatment, which is rare.

Adenomatous Goiter Without Hyperthyroidism. Adenomatous goiter without toxic symptoms is a nodular enlargement of the thyroid gland which does not cause constitutional symptoms, although it frequently simulates such a condition when occurring in individuals who are nervous or whose general health is not good. Clinically adenomatous goiter can be recognized by the irregular type of growth which it produces. The thyroid is symmetrically enlarged and a single or many rounded tumors may be felt on palpation. These tumors may be soft or hard, depending upon whether the degenerative changes that have taken place have been hemorrhagic, cystic or calcareous.

Treatment in this type of goiter other than operative is ineffective in causing the disappearance of the tumors. Surgery is indicated for cosmetic reasons, for the relief of symptoms incident to the pressure of the growth and for a preventive measure against hyperthyroidism, as a certain proportion of these cases develop hyperthyroidism later (averaging fourteen years after the appearance of the goiter). In advising surgery certain factors should be taken into consideration. Since it is a well-known fact that toxic symptoms do not appear at the time of life that the adenomas develop and that the thyroid gland at that time is very essential, operation in young people should be deferred. Iodin medication is particularly dangerous in cases of long standing of adenomatous goiter without hyperthyroidism because of the apparent closely related incidence of the beginning of the hyperthyroidism and the administration of iodin.

Adenomatous Goiter With Hyperthyroidism. In this condition the patient usually gives a history of the presence of a goiter from adolescence. It increases in size until the patient reaches the age of eighteen or nineteen years, then gradually decreases until about the twenty-fifth year, leaving a small barely palpable growth, usually adenomatous. For a number of years it may remain quiescent and then gradually becomes larger. In women this enlargement often occurs during pregnancy. Hyperthyroidism seldom develops before the age of thirty and is most common after forty. Its onset is insidious and its course even. It is accompanied by a constant loss in weight and strength, with the gradual development of cardiac signs. The basal metabolic rate is elevated. The adenomatous goiter with hyperthyroidism lacks the stormy course of that of exophthalmic goiter.

Adenomatous goiter with hyperthyroidism is definitely surgical unless the damage to the patient has been so great that the risk of operation is too hazardous. In from two weeks to ten days after the removal of the adenomatous tissue the hyperthyroidism has completely disappeared. Judd[3] found that after the lapse of two years 83 per cent of these patients considered themselves cured and 5 per cent more were markedly improved.

Exophthalmic Goiter. As defined by Boothby,[4] exophthalmic goiter is "a constitutional disease apparently due to an excessive, probably an abnormal, secretion of an enlarged thyroid gland showing pathologically diffuse, parenchymatous hypertrophy and hyperplasia. It is characterized

by an increased basal metabolic rate with the resulting secondary manifestations, by a peculiar nervous syndrome and usually, by exophthalmos, with a tendency to gastro-intestinal crises of vomiting and diarrhea." The disease usually follows an acute or chronic course. The gland is symmetrical and feels "shotty" on palpation, with the presence in a large majority of cases of thrills and bruit. The bruit in exophthalmic goiter has a maximum intensity over the superior pole and has a drawn-out blowing character which differentiates it from a carotid bruit. Marked bilateral exophthalmos is conclusive evidence of the existence of exophthalmic goiter. It may occur early or late in the disease and be out of proportion to the elevation of the basal metabolic rate. The pulse record is of uncertain value unless a long and careful hospital study can be made. A low pulse pressure precludes the diagnosis of exophthalmic goiter. Restlessness and irritability are marked symptoms. The patients seem stimulated and their movements are semi-purposeful or even choreiform. Increased appetite accompanied by loss in weight is almost invariably a symptom. Loss of strength, especially in the quadriceps, occurs early in the disease.

The most satisfactory results in the treatment of exophthalmic goiter are obtained through surgery. It cannot be denied that nearly all cases improve under medical management and some apparently recover. In the beginning of the disease it is impossible to distinguish between the patients who are destined to fall in this group and those who may suffer severe damage as the disease progresses. Great responsibility is therefore assumed by advising medical treatment in the early cases where thyroidectomy would prevent the development of these severe conditions.

Iodin easily administered in the form of Lugol's solution is of great value in the preoperative and post-operative management of these cases, as shown by Plummer.[5]

SUMMARY—1. Plummer's classification of thyroid diseases is a simple yet practical grouping.

2. Colloid goiters occuring in young people are not surgical and respond to medical treatment.

3. In adenomatous goiters, toxic symptoms do not appear until the goiter has been present for an average of about fourteen years. Iodine therapy is not indicated in adenomatous goiters, at least not in those of long standing, because of the apparent danger of precipitating the symptoms of hyperthyroidism. All adenomatous goiter patients with hyperthyroidism are surgical if the general condition of the patient will justify an operation.

4. Exophthalmic goiters should be diagnosed early in the course of the disease, so as to prevent marked damage to the vital organs.

636 Church Street.

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TOXIC AND EXOPHTHALMIC GOITER

NECESSITY OF CLEAR DIFFERENTIATION BEFORE IODINE THERAPY

H. P. MILLER, B.Sc., M.D., D.N.B.
St. Anthony's Hospital,
ROCK ISLAND, ILLINOIS

Plummer, about 1911, followed by Boothby some years later, in several papers clearly differentiated exophthalmic goiter, or so-called primary hyperthyroidism and adenoma with toxic symptoms or secondary hyperthyroidism. It is not out of place to re-emphasize at this time for the benefit of the general practitioner the importance of differentiating these two clinical entities. The use of Lugol's solution makes a clear understanding of the two types important, for in one case marked benefit is obtained; in the other distinct harm.

Pathology. Many attempts[1] have been made to correlate pathological and clinical pictures without success except in the exophthalmic type. Here the pathological picture has become fairly well defined and after detailed study in a large series of cases is regarded as specific for the condition. Grossly, this consists of a smooth firm increase in size with increased vascularity. Microscopically, there is hypertrophy of the acinar cells from cuboidal to columnar shape with marked hyperplasia. The acinar cells are infolded in

many places due to the increase in number. The stroma shows evidence of proliferation and areas of round celled infiltration. The colloid is moderately increased, thinner than normal and poorer in staining qualities. In the adenoma, the latest studies fail to find a distinguishing characteristic between the histology of the clinically toxic and non-toxic glands. Grossly, the gland is irregularly enlarged and nodular. There may be one nodule or many. The nodules are multiple in 45 to 50 per cent of the cases. Cysts may be present. The adenomatous areas are well encapsulated. Microscopically the adenomas are of two types, i. e., fetal and adult. The fetal type are solid cords of gland cells or small alveoli with or without colloid. The adult type closely resembles the normal adult thyroid with moderately large acini lined by cuboidal cells filled with colloid. In the adult type we may find in this limited area any of the pathological pictures found in the thyroid gland. It may resemble simple colloid goiter, areas may be broken down forming cysts; there may be calcareous infiltration, areas of hyaline degeneration, etc. No characteristic cellular difference is seen in the toxic or non-toxic glands.

Symptomatology. The exophthalmic goiter comes on characteristically in the second and third decade. It is a disease of younger people. The four cardinal signs goiter, exophthalmus, tachycardia, tremor, are all developed only in the later stages. Goiter often is not present. Exophthalmus is a late symptom with our present refined methods of diagnosis. More often some nervousness and slight tremor, rapid exhaustion and palpitation is complained of. There is on examination some elevation of the pulse perhaps to 100. The rate is persistently elevated, however, and a lowering of as much as 10 beats is not obtained even at complete rest. There may be sweats, gastro-intestinal crises, but these are symptoms of the well-developed case. Loss of weight with good appetite, muscle weakness all develop in time. The basal metabolism is definitely elevated and on this hinges the diagnosis in an early state.

Neurocirculatory athenia may give all the symptoms, even a basal metabolism of plus 20 on first test but normal on repeated examination. This is an important point in differential diagnosis.[2] Of 1,675 patients in the Lahey Clinic, Boston, on whom 5,200 basal metabolisms were run, 400 had no elevation, although with symptoms closely resembling hyperthyroidism.

The toxic adenoma gives a different story. The disease is one of the fourth and fifth decades,[3] 77 per cent of the cases entering the Mayo clinic were more than 40, the average being 48. After having a nodular enlargement of the thyroid for a number of years (average 14 to 19 different series) the patient begins to lose weight in spite of good appetite. There may be some nervousness and excitability with quick tiring on mental or physical effort. No exophthalmus ever develops in a true toxic adenoma. There is tremor, tachycardia, a moderate elevation of the blood pressure. Gastro-intestinal crisis are not seen. The basal metabolism is elevated, also, but not to the corresponding degree in the exophthalmic type. Physiologically, the adenomatous glands are pouring excessive secretions of normal thyroid hormone into the body. All the symptoms can be produced by administration of thyroid extract, whereas the exophthalmic syndrome cannot be so produced; hence, it is believed due to an altered secretion rather than an excessive one.

Treatment. The accidental discovery of the use of iodine for detoxification in poisonous goiter is the critical point for which this paper is written. Plummer in 1922 by a carefully controlled study found a reduction of basal metabolism rate, improved clinical course and fewer post operative reactions after administration of iodine to primary cases of hyperthyroidism. There is a deficiency of iodine in the exophthalmic gland. This type uses up iodine faster than the normal gland. An excellent working hypothesis is that mentioned by Mason.[4] Part of the excess thyroxin in exophthalmic goiter is deficient one molecule of iodine and this deficient substance is highly toxic. Administration of iodine converts the abnormal thyroxin to the normal molecule during actual administration of a large amount of iodine. The compound is loose, however, and soon reverts back to the toxic type unless the iodine supply is kept up.

Previous to the use of Lugol's solution medical and surgical treatment of the thyroid had been classified down to a fine point starting with medical treatment such as rest, ice bags, quinine hydrobromide in the mild case to one to six step operations in the more severe cases. Even then the severe case was a problem and a few unavoid-

able deaths occurred from crisis following operation. These can now be prevented by administration of Lugol's solution 5 to 10 minims for a week or 10 days previous to operation and for a period during which the patient is safely over the crisis post operatively. Further study brings out the fact, however, that iodine is only a temporary expedient and if kept up soon loses its effect.

The dread which we had in administering iodine to the hyperactive goiter case was due to lack of differentiation between the toxic adenoma and the primary hyperthyroidism. Iodine administered to an adenoma case may light up toxic symptoms where not before present or when present make them markedly worse. For this reason the use of iodized table salt where members of all ages partake of the same is a pernicious practice. The treatment of toxic adenoma is removal. This can be done in a large proportion of cases in one stage. Ligation does not bring subsidence of symptoms as in the primary type. Boothby brings out the fact, however, that administration of iodine as in the prevent of iodine does not change present methods, only makes operation safer when indicated. Primary hyperthyroidism is more frequently a graded procedure, whereas secondary hyperthyroidism is usually a one-step operation. The use of iodine for a short time before operation in adenoma apparently does not harm.

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RADIUM IN TWENTY CASES OF HYPERTHYROIDISM

A. James Larkin, M. D.
CHICAGO

For the most part the cases listed represent the severe conditions encountered; the poor risks, the terrific onset, the post operatives, and those with serious complications. In all cases 50 milligram doses using gamma ray only with one

No.	Sex	Age	Diagnosis	Complications	B. M. R.	Pulse	Total Dose	No.	Rx Period of	Rx Post Radiation B. M. R.	Pulse	Results
1	F	38	Toxic Ad.	2 Sub-Total Thyroidectomies	...	120	700 mg. hr.	3	14 days	....	78	Imp. 1925
2	F	16	Exop.	Bronchitis Purulent Sinusitis	61	120	3000 mg. hr.	4	4o days	60	110	Cure 1 yr.
3	F	20	Exop.	Acute onset	Unable to get	135	500 mg. hr.	1	1 day	....	130	Died 7 days
4	F	40	Toxic Ad.	Lost 27 lbs.	100	115	1425 mg. hr.	3	16 days	107	90	Unimp.
5	M	46	Exop.	None	61	120	3700 mg. hr.	6	9 mos.	12	80	Cure 2 yrs.
6	F	21	Toxic Ad.	Pressure	25	95	480 mg. hr.	1	1 day	5	80	Cure 2 yrs.
7	F	19	Exop.	Lost 30 lbs.	125	120	2990 mg. hr.	4	20 days	22	100	Imp. 6 mos.
8	F	22	Exop.	2 ligations	70	120	2000 mg. hr.	3	5 days	58	110	Im. 3 mos.
9	F	50	Exop.	Lobectomy Menopause Heart Lesion	59	100	1375 mg. hr.	2	9 days	....	...	Imp. 9 mos.
10	F	50	Toxic Ad.	None	92	104	2930 mg. hr.	4	14 days	....	90	Cure 2 yrs.
11	F	57	Toxic Ad.	Diabetes	84	120	2700 mg. hr.	3	13 days	....	88	Imp. 2 yrs.
12	F	52	Toxic Ad.	Lost 35 lbs. Diarrhea	69	120	2700 mg. hr.	3	10 days	....	115	Unimp. 3 mos.
13	F	19	Exop.	Ligation	44	115	2775 mg. hr.	3	10 days	29	100	Imp. 1 yr.
14	F	60	Exop.	Lost 87 lbs. 2 Ligations Had Thyroid Ext.	95	90	2640 mg. hr.	2	1 day	....	100	Died 7 days
15	F	54	Toxic Ad.	B. L. Pr. 200 2 Ligations	81	125	2000 mg. hr.	3	33 days	....	115	Imp. 1 yr.
16	F	27	Toxic Ad.	None	42	110	3100 mg. hr.	4	6 days	—10	90	Cure 1 yr.
17	M	48	Toxic Ad.	Psychopath	32	110	2500 mg. hr.	3	10 days	....	...	Cure Working
18	F	44	Toxic Ad.	X Ray 4 yrs. ago Acute recurrence	44	115	3000 mg. hr.	4	10 days	....	90	Imp. 6 mos.
19	F	35	Exop.	Fever T. B. (?)	20	100	1900 mg. hr.	2	14 days	....	85	Imp. 18 mos.
20	F	24	Toxic Ad.	None	43	105	3500 mg. hr.	4	14 days	....	115	Imp. 3 mos.

mary type for a short period prior to operation to guard against crisis of the primary type apparently does no harm.

Summary. Primary and secondary hyperthyroidism give two distinct clinical pictures. The pathology of primary hyperthyroidism is characteristic. The use of iodine makes important a thorough understanding of these two types because the treatment is dissimilar. The basal metabolism rate is an important guide in treatment but not in differential diagnosis. The adinch distance were given raying the thymus area in only a few instances. External radiation through the skin and over the glands was exclusively employed. Clinical cures are defined as those that are able to do daily work from one to four years after treatment and not exhibiting symptoms requiring treatment. The improved cases are those presenting marked improvement but not free from symptoms of hyperthyroidism. The unimproved cases numbering two have been lost sight of and did not show any improvement

when last seen. The two fatal cases died seven and twelve days following treatment both being cases almost in extremis when treated. Improvement was noted in 16 cases, 80% of the group, six of whom are listed as cures constituting 30% of the total. The accompanying table gives clinical data on the cases treated.

Conclusions: radium is of distinct value in the treatment of the severer types of hyperthyroidism.

PRIMARY CARCINOMA OF THE APPENDIX

A Report of Two Cases, With a Brief Review of the Literature. 1.

Guy S. Van Alstine, S.B., M.D., F.A.C.S.,

Associate in Surgery, Northwestern University Medical School; Adjunct Surgeon, Wesley Memorial Hospital; Attending Surgeon, South Shore Hospital; formerly Attending Surgeon, Cook County Hospital.

CHICAGO

Leo Meyer[1] said in discussing primary carcinoma of the appendix: "So much confusion exists as to the exact place, both clinically and pathologically, the lesion should occupy that every case should be reported in detail in the hope that a careful sifting and comparison of large numbers of accurate reports may help to clear up the subject." With this object in view, as well as to again emphasize certain conclusions already drawn by many writers on this topic, I present the following cases:

I observed Case 1 while assistant to Dr. William E. Schroeder and report it with his permission. Case 2 is from my own service.

Case 1. Mr. P. M., white, male, 30 years of age, native American, entered the hospital, in December 29, 1916, for treatment of double inguinal hernia. The history was usual for inguinal hernia, excepting that at times he had right iliac pain of a different character from the pain in the hernial regions which was not relieved by rest, as was the hernial pain. Physical examination revealed, in addition to bilateral indirect inguinal herniae, a definite tenderness in the region of McBurney's point. For these reasons, Dr. Schroeder, in addition to performing double herniorrhaphy, removed the appendix.

The appendix was 11 cm. long and about 0.7 cm. in diameter, excepting at the distal end where it widened out to a bulbous smooth rounded mass 1.0 cm. in diameter. The entire appendix was whiter than normal, firm and smooth, with no adhesions to neighboring structures. On section the walls were much thickened and fibrous, with the lumen patent, though narrowed, up to within a very short distance of the terminal mass, where it was totally obliterated. There were no palpable lymph nodes nor was there any thickening of the meso-appendix or any gross change in the cecum. Microscopic section at the time was diagnosed by Dr. Holmes as carcinoma, and later described by Dr. C. A. Barnes as follows:

"In transverse section the lumen of the organ is entirely obliterated and no lining epithelium, glandular, or lymphoid tissue is seen. The muscularis is consid-

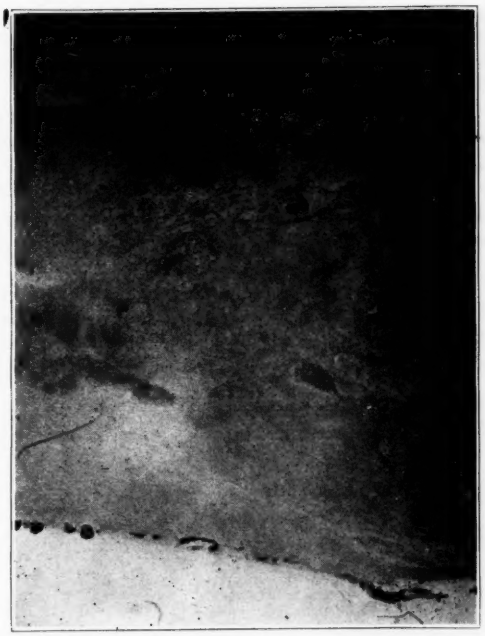

Fig. 1. Case I. Low Power. Longitudinal section of Appendix. Shows tumor mass in tip.

erably hypertrophied and the blood vessels of the peritoneal surface are engorged with blood. Occupying the entire inner portion of the organ there is an infiltrating new growth assuming a medullary arrangement composed of rather light staining cells. These have the appearance of invading and being compressed in places by fibrous connective tissue and extend into and through the entire muscular coat, some groups being seen beneath the peritoneal surface. Mitotic figures are infrequent. Many eosinophiles are seen scattered throughout the tumor area. At no point is invasion of the blood vessels definitely indicated.

"In a study of the longitudinal section of this same case glandular structure and lymphoid tissue are present at one end. The transition to tumor tissue is quite abrupt but in no place in this section can its origin from glandular elements be demonstrated. Nests of tumor cells are seen adjoining, and in places within the lymphoid structures. Many of the cells forming the periphery of the processes of tumor tissue are columnar in appearance and an attempt at reproduc-

tion of glandular tissue with lumena is noted in some of the smaller group of cells.

"It is possible that serial sections might show a direct transition from normal to tumor tissue. The relative lack of malignancy in most of these tumors has led many observers to designate them as 'Pseudo carcinoma;' 'Carcinoid tumor,' 'Naevus.'"

This patient made an uneventful recovery, leaving the hospital on January 17. Three months prior to the writing of this paper he was seen by Dr. Schroeder who reports that he found him in perfect health with no symptoms or findings suggestive of a recurrence of cancer.

Case 2. Mrs. H. C., white, American, about thirty years old, entered the hospital March 13, 1920, giving a rather typical history of a chronic appendicitis, with pain and tenderness, more or less constant in the appendiceal region, more severe when constipated, moderate but gradual loss of weight, and general lack of "pep," extending over a period of ten years.

The evening before entering the hospital she suffered her first attack of acute pain and was referred to me for treatment by her physician, Dr. Elmer S. Horine, of Maywood, Illinois. Examination revealed a defi-

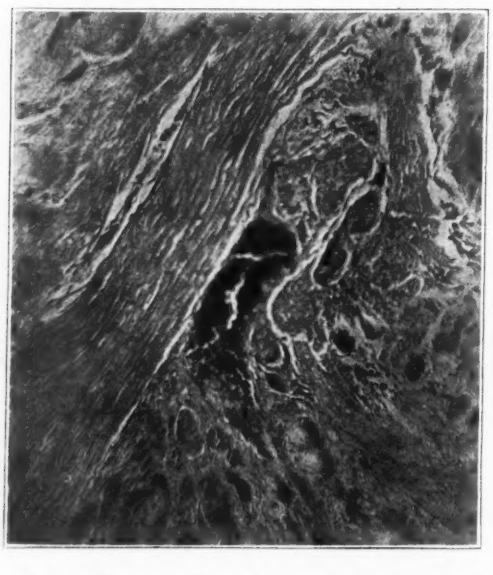

Fig. 2. Case 1. High Power. Shows invasion of muscularis by tumor cell masses in glandular arrangement.

nite and locally tender area at McBurney's point, slight rigidity of the lower right rectus muscle, with a leucocyte count of 11,200. In the absence of other abnormal findings a diagnosis of an acute exacerbation of chronic appendicitis was made and the appendix removed.

Because of the marked similarity in appearance of this specimen to the one described as "Case 1," I made the diagnosis at the operating table of carcinoma of the tip of the appendix.

Aside from being shorter (this one measured 8 cm.) its gross description tallies exactly with that of the first case. Microscopic section was diagnosed at the time by Professor Zeit as "Beginning Medullary Car-

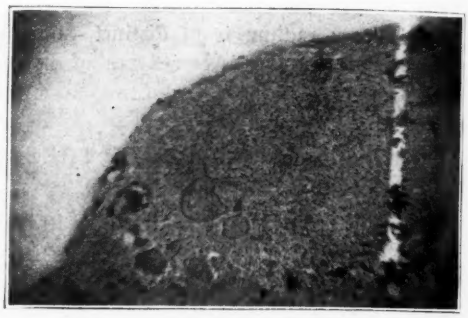

Fig. 3. Case 2. Low Power. Shows tumor mass with cell clusters.

cinoma of the Tip of the Appendix." Dr. Barnes has recently described it more in detail as follows:

"In this section, which does not include an entire transverse section of the appendix, the tissue is composed of muscular layer and an adjacent area of infiltrating tumor tissue. In a few places these tumor cells in arrangement and appearance resemble those seen in the sections previously described. The greater bulk of the tumor tissue, however, consists of very small, deeply staining groups of round cells, with a fair proportion of supporting structure, apparently composed of fibrous and lymphoid tissue being invaded. Eosinophiles are infrequent. Here again invasion of blood vessel lumena is not noted and *growth along lymphatics extends through the muscular coat.*"

This patient also made an uneventful recovery, leaving the hospital nine days later. I have seen her several times since and am pleased to present her here today and to be able to say that to date she has had no symptoms to suggest in any way a recurrence of carcinoma. (See page 9.) Her former symptoms cleared up shortly after leaving the hospital, she has gained in weight, in strength, and in general bodily vigor.

Pathologically these tumors do not differ from the majority of those already reported. The first known case was reported by Merling[2] in 1838. Since then approximately 300 authentic cases have appeared in the literature. All of these various writers have practically agreed that there are two rather definite types of primary carcinomas occurring in the appendix; one, of which Case 2 is an example, displaying masses or islets of closely packed round cells, very similar morphologically to those in basal-cellular epithelio-

mata, and the other in which the cells show a tendency to columnar shape and glandular or "adeno" arrangement as mentioned in Dr. Barnes' description of Case 1. They also agree that there are transitional forms, showing more

Fig. 4. Case 2. Low Power. Shows extension of tumor tissue outward from mucosa into muscularis (long. sect.).

or less of both types. Either the "round" or "columnar" forms may be classed as "scirrhous" or "medullary," according to the relative proportion of stroma and tumor cells. In addition to these two main types, of which the small round cell is twice as frequent as the columnar, other types have been occasionally observed; "Colloid" or "Gelatinous," "Mixed," "Transitional," and "Endotheliomata." While histologically and morphologically most writers agree that these growths present carcinoma characteristics, yet, because of their relative nonmalignancy, pathologists have designated them by a varied descriptive nomenclature.

Warthin[3] points out their similarity to rodent ulcer; Ashoff[4] and Mallory[5] liken them to naevi; Meyer[1] quotes Miloslowich's classification: "a small-celled non-malignant tumor and a cylindrical-celled cancer, similar to cancer in other parts of the intestinal tract;" by still others it has been variously designated as "Pseudo-carcinoma," "Carcinoid," "Benign Cancer," or believed to be a chronic hyperplastic lymphangitis, or hyperplastic changes in other tissues due to inflammatory changes, perforation and scar formation in the organ.

The location, while usually in the tip, as in the above reports, is not infrequently in the wall of the appendix at any point, and in these cases, usually at a point of stricture.

The exact etiology, in common with all carcinomata, is, of course, unknown. The appendix is, however, an ideal location for the application of all existing theories. Being a fetal out-budding, the distal end would be especially prone to harbor "rests" of embryonal cells and so conform to the biological theories. Because of its vestigeal character and its susceptibility to *ordinary* infection, its general resistance would be properly lowered to receive *cancer* infection. And, if the nutritional theory is accepted, we may say that because of its precarious blood supply, anatomical position, frequent infection, and vestigeal character, it suffers from nutritional disturbances probably more than any other one organ in the body.

While appendiceal cancer has been discovered at all ages between five (McGrath[6]) to eighty-one years (Rogg[7]) the majority reported oc-

Fig. 5. Case 2. High Power. Shows masses of tumor cells of "Baso-celled" type invading muscularis.

curred in the third decade, showing an average age earlier than that of cancer elsewhere. All series of cases reported show a predominance of females, but it has been suggested that this is explained by the much more frequent opportunity of removing the appendix in women during

laparotomy for other lesions. A large majority of cases reported show a coexisting appendicitis, some "acute," but more with the "chronic" syndrome. Warwick,[8] quoting MacCarty and McGrath,[6] state that as high as 90 per cent occurred with appendicitis obliterans.

There is no characteristic symptom complex. The majority have given a clinical picture of chronic appendicitis, a considerable number have manifested all of the stages of an acute appendix, while the remainder were removed incidentally during some other operation, and at post mortem.

The condition has never been diagnosed before operation and rarely at time of operation. The final diagnosis, as of all tumors, rests with the pathologist. This should impress upon us the necessity not only for sectioning all appendices removed, but the necessity for multiple or serial sections of each specimen.

Since these cases are not operated upon under their own diagnosis the immediate prognosis is that of the condition for which the operation was performed. The late prognosis must be reserved. A review of the literature leads us to conclude that metastasis is late and infrequent. Notwithstanding this conclusion there are a sufficient number of cases on record of undoubted recurrence of appendiceal carcinomas to warn us to make a guarded prognosis and to keep all such cases under observation. Elting,[9] McWilliams,[10] Lejars,[11] Whipman,[12] Lanz,[13] White,[14] Ruyter,[15] La Comte,[16] Ross,[17] Geist,[18] Luce,[19] Coley,[20] Berger,[21] Brunton & Glover,[22] and Obendorfer[23] have all reported such cases, most of these showing recurrence within three months. Microscopic section showed in each instance tumor cells of the same type as those found at the primary operation in the appendix.

The columnar type is the usual one to metastasize, the round cell type rarely. The colloid type has a tendency to rupture through into the peritoneal cavity; also to involve the cecum. A few cases of cecal carcinoma have been strongly suspected of appendiceal origin,[24] but not definitely proven, as the pathologists find it difficult to say whether the cecum or the appendix was the primary seat of the lesion. In a number of these cases the meso-appendix and the neighboring lymph nodes have been found involved.

The treatment is appendectomy. McWilliams[10] has advised, because of the occasional case of extension and because of the difficulty in recognizing the condition macroscopically in all appendectomies to remove the meso-appendix widely. The further treatment should be a close follow-up of all patients found to have had one of these tumors and reoperation at the first suggestion of recurrence.

CONCLUSIONS

In concluding I can only emphasize again the conclusions formulated by Meyer,[1] Warwick,[8] Reimann[25] and others:

1. That primary carcinoma of the appendix occurs in at least an average of 0.5 per cent of removed appendices.

2. That these present two main types; the spheroidal or round celled or "Basal-celled" type, and the "Columnar" or "adeno" type, of which the first is more common and the latter more prone to malignant characteristics.

3. That the condition has never been positively diagnosed pre-operative and rarely at operation.

4. That while by far the greater number have appeared benign, they show histologically, malignant characteristics; atypical arrangement of epithelium; atypical location of epithelium; and in a few cases, metastasis; for which reason we should remove the appendix regardless of appearance or of symptoms, whenever opening the abdomen in its neighborhood, and in all cases of appendectomy make multiple or serial sections for close microscopic study.

5. That all patients showing carcinoma of the appendix, however seemingly benign, should be kept under close observation.

*Presented in Clinic at Wesley Memorial Hospital, Chicago, October 24, 1923, during the Thirteenth Annual Session of the Clinical Congress of the American College of Surgeons.
†Now deceased.
‡Still well in October, 1925, at which time a complete examination was made, including Gastro-intestinal x-ray.

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SLIDING HERNIA*

PAUL A. WHITE, M.D., F. A. C. S.
DAVENPORT, IOWA

What is sliding hernia? The only viscus that can be contained in a true sliding hernia is one whose normal habitat is the posterior abdominal wall, is only partially covered with peritoneum, and which has normally no appreciable mesentery.[4] The ascending colon, descending colon, and bladder are the only organs that normally fall within these limitations. Congenital developmental anomalies of the cecum or first portion of the sigmoid may occur, leaving them partially covered with peritoneum. They may under these circumstances be contained in sliding hernias. The cecum may thus often form the posterior portion of the sac while the appendix lies within the sac.[2]

Several authors have proposed theories regarding the formation of sliding hernia. Those evolved by Moschcowitz appear the most logical. He believes a sliding hernia may be produced by either of two mechanisms. By one method, which he calls the pushing type, the viscus involved is conceived as first presenting at the inguinal opening. The peritoneum, if present, is drawn down by this viscus and the resulting sac is always small. By the other method the peritoneum makes the initial entrance into the inguinal canal. As it enlarges it may contain the usual elements of a simple hernia. After enlargement it may make traction on the large bowel and thus bring it through the inguinal opening with its nutrient vessels.

I have encountered but two cases of sliding hernia in five years of active surgical practice, and this probably represents general surgical experience outside of clinical centers or institutions. Reports of this condition are not common.[4] The surgeon may not recognize sliding hernia when he has a case of it. The obstacles he encounters he may believe are due to adhesions resulting from former inflammatory processes caused by pressure from a truss, or infection. He may not wish to record an unpleasant experience. If a sliding hernia is not recognized real difficulties may arise and possibilities for harm to the patient be ever present. Considerable confusion arises from the erroneous conception that invagination of the cecum, transverse colon, or sigmoid in a hernial sac constitutes sliding hernia of these structures.

The diagnosis is not often made preoperatively because the differential diagnostic points are so trivial that they do not lead to definite conclusions and because the condition is so rare that it may not enter the examiner's mind. The diagnosis was not be made before operation in any instance in a series of seven cases reported by Criley.[1]

The most reliable points in the diagnosis of sliding hernias are: 1. they are seldom strangulated because they are usually large with a wide inguinal opening; 2. they cannot be completely

*Presented before the Association of the Resident and ex-Resident Physicians of the Mayo Clinic at Rochester, Minn., Oct. 19, 1925.

reduced and attempts at reduction are painful; 3. pressure from a truss is painful, even intolerable; for this reason a truss that has been worn for a long time may be discarded in later years, which may mean that a simple hernia, formerly reducible, has acquired the nature of a sliding hernia; 4. tympany may be elicited by percussion over the tumor because of gas in the colon; 5. a roentgenogram of the colon may show the viscus in the hernia (Fig. 1) and 6, when the bladder is suspected to be the sliding element in a hernia such measures as injection of air or

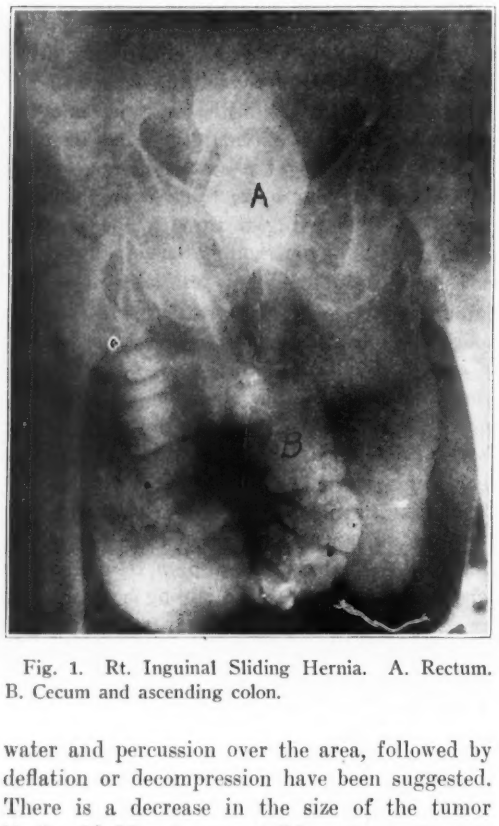

Fig. 1. Rt. Inguinal Sliding Hernia. A. Rectum. B. Cecum and ascending colon.

water and percussion over the area, followed by deflation or decompression have been suggested. There is a decrease in the size of the tumor if the bladder is responsible. A crystogram may be of value.

A number of surgical procedures have been evolved for the reduction and cure of sliding hernia. Most surgeons, however, have found these inapplicable because of the variability of conditions presented in different cases. The method of making flaps of the peritoneal sac[6] and turning them around the prolapsed cecum to cover its denuded surface has not been possible of execution in many cases. Most surgeons have met the situation with the method demanded by the exigencies of the occasion and the originality and skill inherent in their training and experience. Moschcowitz describes the first case he encountered, in which he freed the bowel by cutting and ligating vessels in the adherent tissues. He realized, to his discomfiture later, that he had ligated the branches of the inferior mesenteric artery supplying that segment of the prolapsed bowel, but fortunately no untoward complications developed. Many surgeons have probably had the same experience with their first case of sliding hernia, except that perhaps their results have not been so fortunate.

Moschcowitz has recently made a suggestion with regard to surgical procedure that may be of value. In the pushing type of hernia with small or no peritoneal sac he suggests that the incision in the peritoneum should be high at the internal inguinal ring so that traction may be put on the intra-abdominal portion of the prolapsed bowel. This, he believes, combined with blunt dissection and pushing upward of the lower part of the loop of bowel will replace it beneath the structures of the inguinal floor. When the hernia is the pulling type, with a larger peritoneal sac and usually lower prolapse of the bowel, he would make a second incision opposite the umbilical region, drop the patient in the Trendelenburg position, pack off the small bowel, then "reverse the mechanism" by making traction higher on the intra-abdominal portion of the colon. This should pull the prolapsed loop of bowel with its peritoneum up to the level of the inguinal ring. The parietal peritoneum may then be sutured to the posterior abdominal structures and the upper incision closed. The sac in the original incision is now ligated and excised, the remaining loop of the prolapsed bowel pushed back beneath the structures of the inguinal floor, and the usual radical repair for inguinal hernia done.

One of the two cases of sliding hernia which I have observed was of an enormous right inguinal hernia. The patient was seventy-nine years old and not having trouble from the hernia. Because of its great size and because of the age of the patient the hernia was considered inoperable. The patient first noticed this hernia sixty years ago during forced marches while he was a soldier in the Civil War. For many years it could be reduced and was retained with a truss.

It then apparently had all the characteristics of a simple indirect inguinal hernia. During succeeding years it continued to increase in size and gradually assumed such proportions (Fig. 1) that it extended down to the level of the knees. It contained the cecum, ascending colon, part of the transverse colon, and probably most of the small intestine. A roentgenogram taken higher than the one illustrated shows complete prolapse of the transverse colon toward the inguinal ring from its attachment in the splenic region.

The second patient was a man aged forty-nine, with a hernia protruding in the left inguinal region. He weighed 225 pounds, and was first seen in August, 1921. His history and physical examination except those relating to the hernia were unimportant. Twenty-four years before examination, while he was employed in a glass factory in Russia, he jumped from a box to the floor, and at once felt a piercing pain in the left inguinal region. Examining here he noticed a small mass which felt like a marble or a button. During the next twenty years he wore a truss and had no discomfort from the hernia. After coming to this country he worked as a peddler, lifting daily large barrels of apples, potatoes, and other vegetables without discomfort or inconvenience from either hernia or truss. Four years before I examined him he had felt a sudden piercing pain in the left inguinal region on attempting to life his wife quickly from the floor, where she had fallen in a hysterical condition, to a nearby couch. On examination he found a mass "as large as a goose egg" in this location. The tumor was easily reduced and he continued to wear a truss for the three succeeding years without much difficulty. One year before I saw him an illness of his wife necessitated his running up and down stairs many times a day. During the next two or three months he began having difficulty in controlling the hernia with the truss and found it necessary to adjust it many times a day. After six months, pressure from the truss was becoming painful and he had much more difficulty in so adjusting it that it would retain the mass. Three months later he had discarded the truss.

Examination revealed a large left inguinal hernia with a wide neck, extending 25 cm. below the ramus of the pubis. The hernia was irreducible and attempts to reduce it were painful. The patient was a large man with a tense protuberant abdomen that focused its contents toward the inguinal region. The possibility that the tumor was a sliding hernia did not occur to me. If due consideration had been given to the size of the tumor, the wide neck of the sac, the inability to reduce the mass, and particularly to the patient's previous intolerance for the truss, doubtless at least a tentative diagnosis of sliding hernia could have been made. A roentgenogram of the colon would probably have shown the loop of bowel descending into the scrotum. There was an area of cutaneous atrophy and the scar of a recently healed ulcer in the left inguinal region, the result of years of pressure from the truss.

Operation was performed August 8, 1921. The usual inguinal incision was made parallel to Poupart's ligament and 3 or 4 cm. above it, and the structures of the cord were separated from the mass. Fortunately the unusual appearance of the tumor dictated caution, and the incision in the sac was placed high at the internal inguinal ring. The hand when slipped into this opening passed into the sac down to about the level of the remus of the pubis where it ended like a mitten. Below this the mass continued, covered with adhesions and inflammatory exudate which made its identification as the large bowel very uncertain. The loop, however, turned back through the wide inguinal ring and was found to be the first loop of the sigmoid. The sac was empty and the redundant portion of it was ligated, excised, and the stump buried beneath the muscles of the abdominal wall.

By blunt dissection, traction on the descending loop, and upward pressure on the distal portion, the mass was finally reduced beneath the structures of the inguinal floor without traumatizing its blood vessels. The hernia was repaired by the Andres-Bassini-Masson method. The conjoined tendon and internal oblique muscle were sutured to Poupart's ligament as was the medial flap of the fascia of the external rectus muscle, both being brought beneath the cord. The lateral flap of the fascia was imbricated over the medial flap beneath the cord. Several sutures were also taken above the exit of the cord through the internal inguinal ring. Due to the recently healed ulcer or the unusual manipulation necessary, infection developed in the wound, but this ultimately disappeared.

Four months later the hernia had recurred and there was a hydrocele, about 15 cm. in diameter, on the left side. The hernia extended only to the entrance of the scrotum but, like the former one, was irreducible. In order to obviate the possibility of further recurrence consent to an orchidectomy was obtained in case it should prove necessary.

At the second operation, May 15, 1922, a loop of descending colon uncovered by peritoneum was found. There was no peritoneal sac and the peritoneum was not opened. The testicle was delivered, the cord structures ligated and orchidectomy completed. Because of the few adhesions about the prolapsed bowel it was comparatively easy to elevate the redundant loop by blunt dissection and push it upward into the inguinal region. Radical repair of the inguinal floor was done by the method previously described.

The hernia has not recurred after three years and a half although the patient has retained his weight and does all of the work in a busy grocery store.

SUMMARY

Sliding hernias are rare and a discussion of them may therefore be of service. The danger to the patient is real and difficulties are great at operation if the fundamental anatomic considerations regarding this type of hernia are not kept in mind.

Usually a definite diagnosis cannot be made

previous to operation.[3] Any large hernia with a wide neck, particularly if it is irreducible and attempts at reduction are painful, should suggest the sliding variety. Intolerance for a truss is usual. Roentgenographic examination of the colon may be of value.

No definite surgical procedure is suitable for all cases of sliding hernia. The most important consideration is to recognize the presence of a prolapsed viscus not covered by peritoneum and to remember that the posterior structures of this viscus may contain important nutrient blood vessels. The sac, if present, should be opened high at the internal inguinal ring. This will allow examination, determination of the situation and identity of the structures involved and will be a great aid in planning the surgical procedure. The method adopted in reducing the bowel will largely be dictated by the exigencies of the circumstances as well as the training and originality of the surgeon. The plan described by Moschcowitz, of making traction on the intra-abdominal colon either through the incision in the inguinal region, or through a second incision placed beside the umbilicus, is worthy of consideration.

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RESECTION OF OBSTRUCTIONS AT THE VESICLE ORIFICE BY MEANS OF A NEW CYSTOSCOPIC INSTRUMENT EMPLOYING A CUTTING CURRENT CAPABLE OF OPERATION IN A WATER MEDIUM.* (ABSTRACT)

MAXIMILIAN STERN, M. D., F. A. C. S.
NEW YORK CITY

There has been a growing conviction that all obstructions of the vesicle neck would be amenable to minor surgery were the means at hand.

The production under my direction, of a cutting current which in addition to other necessary qualities is capable of operation in water, has made possible a cystoscopic procedure.

My instrument, the Resectoscope, consists of 1. a sheath which is one inch longer than usual and possesses a large square fenestrum to engage the protruding parts; 2. an examining telescope for general inspection and diagnosis; 3. the working parts joined in a compact bundle which comprises a direct vision telescope, a water conduit, a light carrier, and a manually controlled cutting loop, all of which terminate in the proximal end of the fenestrum in order to leave all space there for the engagement of intruding tissue.

The loop carries the cutting current and consists of a small ring of tungsten wire mounted on a peculiarly insulated shaft and is controlled by a gear mechanism so as to move it to the distal end of the fenestrum under guidance of the eye, removing in its excursion spaghetti-like sections of tissue without causing hemorrhage.

By this method, any number of sections can be removed at a single sitting from any part of the sphincter or lobes.

All types of obstructions have been treated with uniform success, including large obstructive so-called hypertrophies which consistently shrink in size within a few weeks and permit of complete emptying even in instances where a large residual was present.

219 West 81st Street.

*Read before Chicago Medical Society, Feb. 24, 1926.

THE FIRST (?) AMERICAN CASE OF MEGACOLON*

J. RAWSON PENNINGTON
CHICAGO

While engaged in the preparation of my "Treatise on the Diseases and Injuries of the Rectum, Anus and Pelvic Colon," I was agreeably surprised to discover that long before Hirschsprung's time a case of megacolon had been placed on record by a former member of the profession in Chicago—Dr. William Lewitt—at that time Demonstrator of Anatomy in Rush Medical College. It appeared in the *Chicago Medical Journal* for August, 1867 (p. 359) and is to the following effect:

ENLARGEMENT OF THE COLON

By WM. LEWITT, M. D.,

Demonstrator of Anatomy in Rush Medical College.

"In September, 1864, I was called upon, in company with Dr. E. Wells, of Ann Arbor, Mich., to visit Wm. C., *aet.* 21, to relieve him of what was called constipation. He had not had an evacuation of the

*Read before the Chicago Society of Medical History, Dec. 18, 1925.

bowels for three weeks, during which time he was in the hands of a *spiritual doctor,* who said he was suffering from *windy dropsy.*

"On visiting the patient we found him suffering intense agony from pain in the abdomen, with frequent desire to expel flatus from the rectum, which could only be accomplished by standing upon his head and hands, in a perpendicular position.

"On examining the patient, we found the abdomen enormously distended and so tense that it was impossible to feel the outlines of any of the abdominal organs. We learned from him that he once suffered from a similar attack, when about 12 years of age, which continued for about two weeks, without any evacuation of the bowels, and had ever since then been suffering from torpor of the bowels, only having an evacuation once in eight or ten days.

"Upon an examination per anum, we found what appeared to be an enormous tumor, filling up the entire pelvic cavity, and having all the appearance of a child's head at term; in fact, it bore a closer resemblance to that than anything else. The rectum appeared to be normal.

"He having taken large quantities of powerful cathartics, it was not deemed advisable to repeat them, and copious enemas, containing ol. terebinth., were ordered, but in attempting to use them, they could not be thrown up higher than the rectum and would flow immediately back. It was then thought advisable to try what could be done with the aid of the long rectum tube. This could not be carried farther up than the upper portion of the rectum, when it would fold upon itself, showing that there was some obstruction at the upper end of the rectum or sigmoid flexure of the colon.

"Laxatives were used, containing large quantities of fel. bov. and ol. terebinth., but with no effect, with the exception of occasionally an expulsion of small quantities of flatus from the rectum, and then only by resorting to the position mentioned above. He continued in this condition for about a week after I saw him, when he was suddenly seized with excruciating pain in the abdomen and in a few hours expired.

"A *post mortem* examination, made about six hours after death, revealed the following condition: The peritoneal cavity was enormously distended with gas, and a large quantity of fecal matter of a battery consistence, was extravasated into it, showing that perforation had taken place, and was the immediate cause of death. Perforation had taken place at several points in the colon. The ascending and descending colon (for there was no transverse) appeared like two immense cylinders, lying side by side, and extending from the epigastrium to the pelvis, and filled with soft fecal matter, and each was about 5½ inches in diameter. The caput coli was not much enlarged; the transverse colon was entirely obliterated, and the two cylinders of the ascending and descending colon were folded upon themselves, filling up the entire surface of the abdominal cavity. The sigmoid flexure was about the same diameter, and what was supposed to be the tumor filling up the pelvic cavity was the sigmoid flexure enormously distended with fecal matter and folded down upon itself, giving it the firm and rounded shape of a pelvic tumor that was supposed to exist, and pressed so firmly upon the upper portion of the rectum as to prevent all passage of fecal matter into it. The colon was very much thickened and completely filled with fecal matter of a battery consistence, containing over a large wooden pail full, besides what had extravasated through the perforations into the peritoneal cavity.

The reason for his adopting that peculiar and unnatural position to enable him to expel the flatus from his bowels was that by that position the weight of the distended sigmoid flexure was taken off the upper portion of rectum and allowed a small quantity of flatus to escape, which afforded him some relief."

So far I have been unable to discover any earlier instance in this country but, assuming this possible, have interpolated a question mark in the title. Some years later, Harrington described another example from near Monmouth, in Warren County, Illinois, and this is found in the same journal, for April, 1878 (p. 400), though by this time it had been enlarged to the *Chicago Medical Journal and Examiner.*

Now in my book I show that Ruysch, the famous Dutch anatomist, gave a description of a case in a 5-year old girl as long ago as 1689; while Parry in England, in 1829, furnished details of one in an adult, and Billard, of France, the same year another in a child. Moreover, Von Ammon pictured the condition in his celebrated Atlas of Congenital Surgical Diseases, which, you remember, came out in 1842. So it seems best to term the condition megacolon; though, to be sure, Hirschsprung attracted permanent attention to it in his contributions of 1886-8.

I was naturally interested in our former fellow-citizen and wrote to a namesake, Dr. Frederick C. Lewitt, in San Francisco, who, as anticipated, proved to be a grandson. I am under obligations to him for the few data he was able to give me: Dr. William Lewitt was born in Leicester, England, in 1828. He went to San Francisco about 1874 and was Professor of Anatomy in the old Toland Medical College, which became the Medical Department of the University of California, and held this position until his death. From the San Francisco Health Department I learned the Doctor died at the age of 55, on Aug. 5, 1883.

From various other sources I found that Dr.

Lewitt graduated from the Medical Department of the University of Michigan, at Ann Arbor, in 1854, and from Jefferson Medical College, Philadelphia, in 1857. He apparently was soon appointed Demonstrator of Anatomy in his alma mater and was held in high esteem, as shown by the following testimonial from the class of 1867:

Ann Arbor, March 22, 1867.

To William Lewitt, M.D.,

Demonstrator of Anatomy, Medical Department, University of Michigan.

Dear Sir: Knowing, as we well do, the difficulty attending the position you occupy as Demonstrator of Anatomy, the energy necessary to supply so large a class with *material*—none of which having been furnished by this State—allow us to congratulate you on your success, and as members of the Class of 1866-67 to express our entire satisfaction with the manner in which your department has been conducted.

For while other schools during the past winter have felt most sorely what it is to be in *want*, we have had the benefit of a plentiful supply of the *best*, with an abundance to spare. And when it is remembered that the class you have assisted so efficiently during the past session in acquiring a knowledge of that most important branch of medicine—practical anatomy—is the largest ever assembled in America, or perhaps in the world, too much praise cannot be bestowed upon our "little Napoleon of the dissecting room."—*(Chicago Medical Journal*, May, 1867, p. 233.)

The same publication for March, 1867 (p. 139) contains an editorial from which we learn:

William Lewitt has been appointed Demonstrator of Anatomy in Rush Medical College. His qualifications for the post have been demonstrated before the great classes of the University of Michigan—his executive ability being sufficiently shown in the fact that he has annually supplied and directed the labors of over 100 dissecting classes. The dissecting rooms under his control have been models of neatness and order—it is safe to say, being in all respects, thus far, unsurpassed on the continent. An accurate and minute anatomist, a rapid and expert dissector, courteous and attentive to his classes, the College is to be congratulated upon its success in securing his services.

Moses Gunn was appointed successor to the lamented Brainard, in the Chair of Surgery at Rush Medical College, and in the News Items from the same journal, for May, 1867 (p. 24), we read that Prof. Gunn's office was in the McCormick Building (where the Apollo Theatre now stands), he will, "it is understood, confine has practice exclusively to surgery. Dr. Lewitt, the Demonstrator of the College, will be found at the same office and engage both in surgery and in general practice."

The case of megacolon which came under his observation during his career at Ann Arbor, evidently was published not long after his arrival in his new home, to make himself better known to his professional colleagues.

AN EXPERIMENTAL STUDY OF ACUTE COCAINE POISONING, ITS PROPHYLAXIS AND TREATMENT*

ARTHUR L. TATUM, Ph.D., M.D.
(From the Laboratory of Pharmacology of the University of Chicago)
CHICAGO

While serious accidents with cocaine in local anesthesia induction are not frequent they still occur occasionally and may be expected so long as cocaine continues to be used as a local anesthetic.

In both man and laboratory animals death occurs through failure of the respiratory center after a period of clonic convulsions. This is proven by the fact that the heart continues to beat for some time after complete cessation of respiration.

Since the respiration fails first, it should be expected that artificial respiration would be indicated, but in our experience with the laboratory animals, the rabbit, cat, dog and monkey, only the rabbit is benefited by this method of treatment. In the more highly developed animals, such as the cat, dog and monkey, artificial respiration sufficed to prolong life for some time, sometimes several hours, but so far as we could determine the minimal lethal dose to these animals could not be raised by such a method of treatment.

Earlier investigators in this field have made the instructive observation that decortication, or even complete decerebration significantly raises the minimal fatal dosage of cocaine. This would lead one to suspect that respiratory failure was due in part to the indirect effects of cocaine on the motor cortex of the brain. Furthermore, it was observed that the higher the type of animal used, i. e., the more complex the brain becomes, the more susceptible is the animal to cocaine. These facts led us to attempt the use of hypnotic drugs and our choice was the barbituric acid series of compounds, particularly barbital or veronal. Chloral hydrate, morphin, ether and

*For the original papers on this subject see Tatum, Atkinson & Collins: Jr. Pharm. & Exp. Therap., 1925, XXVI, 325. Tatum & Collins: Archives of Int. Medicine, 1926, (in press).

other depressants had been tried but without any significant curative value.

Our experience in the treatment of cocaine poisoned rabbits with barbital was somewhat successful but not so good as simple artificial respiration. We were able to raise the minimal lethal dosage of cocaine in the rabbit about one-third by the use of the intravenous injection of the soluble barbital-sodium. By simple artificial respiration the minimal lethal dose in the rabbit could be more than doubled.

Since artificial respiration alone was practically a useless method of treatment in the cat and dog poisoned by cocaine and knowing these animals to be of a higher type in which the brain apparently has a greater effect on medullary function, we were encouraged to try the treatment of cocaine poisoning in the dog by intravenous administration of barbital-sodium. We very soon saw that such a procedure was a good lead, the convulsions were immediately stopped and prospects for uneventful recovery were good. However, the anesthetic effect of the barbital lasted rather too long so that we reduced the amount of barbital at the same time adding paraldehyde. Experience with forty or fifty animals finally led us to use 100 mg. barbital-sodium per kilogram body weight dissolved in 5 c.c. of a saturated solution of paraldehyde in water per kilogram body weight. Such a solution is stable and may be kept on hand available for emergencies.

By such a method of treatment we were able to more than double the minimal fatal dose of cocaine in the dog. We furthermore observed that the longer the time the animal was permitted to convulse the greater the danger of failure in treatment. If the hypnotic were given before convulsions occurred the minimal lethal dose could be trebled.

Another point developed in the course of this work was, namely, that the hypnotic must be given in a quantity such as to prevent all evidences of cortical stimulation such as clonic convulsions and tremors. Running movements were often seen but these seemed to be quite different in significance from tremors or clonic convulsions and did not worry us. But tremors or clonic convulsions occurring after the hypnotic administration almost always meant death of the animal in a short time. Whether a second injection of hypnotic would be of value in such cases we do not know but are inclined to think it would be useful.

Our next step in the study was the application of the hypnotic method of treatment of cocaine poisoning to the monkey, a still higher type of animal. Our results were exceedingly satisfactory. We were able to raise the minimal fatal dose of cocaine to something over three times and this even after a period of clonic convulsions lasting from one to five minutes. Convulsions *immediately* ceased at the intravenous injection of the barbital-paraldehyde solution. The dosage of hypnotic required for the monkey was about 70% that required by the dog. The depression lasts in the monkey from one to two hours, a time sufficient to permit of destruction or detoxication of the cocaine, at least, sufficiently to carry the animal past the danger period.

SUMMARY

1. Poisoning by subcutaneous injections of cocaine cause death by respiratory failure.

2. Artificial respiration is an effective treatment only in the rabbit, the lowest type of animal employed in this series. In the higher types —the cat, dog and monkey—artificial respiration was of no avail.

3. The intravenous injection of appropriate hypnotics such as our mixture of barbital-sodium and paraldehyde cause immediate cessation of convulsions.

4. Hypnotics must be given in such a quantity as to prevent any and all manifestations of cortical or clonic convulsions.

5. The longer the convulsions are allowed to continue before the administration of the hypnotics the greater is the danger of failure of the treatment, consequently the treatment should be instituted as soon as possible after clonic convulsions appear.

6. A prophylactic administration of the hypnotics raises the tolerance to the greatest extent.

7. Since the efficacy of the treatment parallels the increasing complexity or development of the brain in the series of animals employed, it should follow that man should be still more susceptible to this type of treatment. As to the dosage to be employed we can only guess. Our suggestion is to employ a dosage equal to or slightly larger than the usual standard hypnotic

dose. If this is insufficient to completely check the clonic convulsions a cautious increase in dosage would be indicated.

ARTHRITIS DEFORMANS

JOHN L. PORTER, M. D.

Professor of Orthopedic Surgery, Northwestern University Medical School; Attending Orthopedic Surgeon, St. Lukes Hospital, and Evanston Hospital

EVANSTON, ILL.

It has seemed to me for several years that the chief obstacle to the development of a rational method of treatment for arthritis deformans, and perhaps one of the chief reasons for our lack of success in the treatment of many of these chronic forms of joint trouble, has been the fact that we have always looked upon chronic joints, so-called rheumatoid arthritis, arthritis deformans, osteo-arthritis, etc., as one group. We have *thought* of rheumatoid joints and rheumatism and rheumatic affections. It is not so very long ago that one of the common questions for us to ask each other was, "What do you do for rheumatic joints and chronic rheumatism?" Not long ago we used the term "malaria" as a convenient name for any form of fever in which we could make no definite diagnosis. Not until the micro-organism of malaria was differentiated and identified were we able to learn the etiology and use the name definitely. Now, when we say malaria, we mean something. And the same is true of the terms "rheumatism" or "rheumatoid." We have reached the point in pathological investigations where we differentiate between the different forms of arthritis well enough to allow us to restrict those terms to a definite *acute* type. Since Nichols and Richardson published their epoch-making article in 1910 in the *American Journal of Medical Research,* we have come to look upon chronic joints not as one group, but as composed of several groups. In their article they described two types, the degenerative and the hypertrophic, but later investigations have convinced us that the group which they describe as degenerative or proliferative arthritis contains two varieties. We now think of the pathology of three groups: First, the infectious group; second, the atrophic group, and third, the hypertrophic group.

Let us try for a moment to visualize a typical case of one of these three groups.

GROUP 1—INFECTIOUS ARTHRITIS

In order to illustrate the pathology of this group we might cite a gonorrheal arthritis as a typical example of those infections which gradually become chronic. Most infectious joints are acute from the start. They may or may not be pyogenic in their development, but many of them are, and we may have a joint infection with an abscess in the joint cavity. We also have many infectious joints not of that type that begin sub-acutely and gradually develop into the chronic form. The patient will have one or two or three joints that are temporarily inflamed, red and swollen, etc., and they gradually decline and all symptoms focus upon one joint, usually within a month or so after the first onset of the trouble. So we must remember that in this form of arthritis the infection has a characteristically acute period with swelling and redness and a great deal of sensitiveness and pain. But that type of infection develops into a chronic joint, and sometimes the effects of a gonorrheal infection lasts many years and the patient has a joint that is sensitive, painful and disabled. You need not think of gonorrhea *only* as having these effects; there are other infections causing this form of arthritis, as infections of teeth, tonsils, gall-bladder, etc. We *do* see secondary infections of the joints which are chronic from the start, but in speaking of the infectious group of chronic arthritis we mean a joint which has been definitely infected with some micro-organisms, and we have learned that quite a large number of these begin as chronic infections. A patient with an infection of the teeth or of a sinus or of the gall-bladder, that he has carried with him for years, has developed a resistance to that toxemia, and when the toxemia finally affects his joints, his eye, or the nerve sheaths, it does so in a chronic manner, and he begins to complain of pain.

Let me emphasize that in the acutely infectious group the characteristic feature is that sometime during the infection there is an acute period becoming chronic, and the pathology is confined to the peri-articular structures rather than the synovial surfaces. The bone is not involved. This sets that group aside.

GROUP II—ATROPHIC ARTHRITIS

Picture to yourselves one of these cases of chronic arthritis which we see so frequently in

thin, poorly nourished women between the ages of 25 and 40. The process begins in the joints of the hand or in the toes, gradually affecting the elbows or shoulders or knees or hips or spine. Sometimes two or three joints are affected, sometimes all of the joints are affected, and sometimes only one joint is affected. But the process is the same, and it is characteristically this: In the pathology of an atrophic type of arthritis we have a gradual atrophy. The synovia and articular surfaces are attacked a little, adhesions take place between the synovial membrane and the capsule and the edges of the cartilage, and as the process goes on the joints become distorted, painful and immobile, and the x-ray shows that the ends of the bones have faded away as the result of insufficient nourishment. We do not know of any better reason to account for it. The trouble begins as a chronic affair.

These patients have sore, inflamed joints; they are worse at times than they are at others, as gradually one joint, then another, becomes involved. Yesterday I saw at Salt Lake City a healthy looking young woman who had three knuckle joints on one hand and two on the other that were involved. During the last year she had developed a characteristic atrophic arthritis of the knee and now of the ankle and foot, and she is walking about some and doing household duties. The joints first affected have slowly become more and more disabled, but they are now much less painful than they formerly were. And that is true in all these cases. As time goes on the joint becomes less mobile and the pain becomes less.

The characteristic of the atrophic group is that the patient shows signs of atrophy everywhere—the hair, the teeth, the bones, the muscles, are all atrophic. We see cases in which the feet and ankles and perhaps the hands are covered with herpes, recurring blisters which cannot be healed up. The nails get all out of shape and thickened like the nails of a senile patient. The evidences of atrophy are also seen in x-rays of the bones. They show a distinct lack of density. In this form of the disease the interior of the joint may not be so badly affected as in the infectious type, which is sure to get stiff, but the bone shows a great deal more destruction or atrophy, and gradually the articular surfaces become destroyed, adhesions take place, and the joint becomes stiff.

The atrophic group is coming to be sharply differentiated in very large measure, indeed. Do not understand me that the differentiation is so sharp that you can say, "This is infectious arthritis, this atrophic arthritis, and this the hypertrophic type of the disease." I am simply trying to get into your mind a *typical* case which can be *easily* differentiated.

GROUP III—HYPERTROPHIC ARTHRITIS

While the atrophic type of arthritis is usually polyarticular, the hypertrophic group is usually monarticular. While the hypertrophic arthritis occurs more frequently in early middle age and more frequently in women than in men, the other form occurs more frequently in later life and affects men quite as much as women. In the atrophic group we have atrophy, in the hypertrophic group we have hypertrophy, a very marked production of new bone around the edges of the joint, but, with atrophy and absorption of bone at weight-bearing points.

The hip is one of the joints most frequently affected with the hypertrophic type of the disease. We find that the head of the femur has become smoothed off and flattened, and the top of it is quite free from cartilage and as hard as a billiard ball, and around the edges of the neck and acetabulum are growths of new bone. In this hypertrophic group, and also in the infectious group, we have a distinct exudate into the tissues. If a man comes limping into your office and says, "I have a bad hip that has been bothering me for three or four months, it is getting worse and I cannot work," strip him, take hold of both hips together and get the trochanters in your hands and see how much more exudate you have in one hand than in the other. There is an increase of bone and usually a little increase in the tension of the joint, not much. It is in the infectious group that we find a joint usually filling up with fluid, although the atrophic group usually has an acute period with effusion into the joints.

Etiology—We have found that the symptomatology and pathology in these three groups are different; why should we go on thinking that the etiology is the same? I don't believe it is. It would be useless for me to go into the discussion of focal infections as the cause of chronic arthritis. I have said that in my opinion many of the infectious group are due to focal

infections somewhere in the body. I believe that the atrophic type is not due so much to infections as it is to a disturbance of the chemistry and the metabolism of the body, and very likely it is due to disfunction of some of the endocrine glands. We are coming to think so for the reason that the atrophy is so general, and also because in a few cases we have found that the exhibition of endocrine gland substance in the way of medication is helpful. But in the hypertrophic type we have a rather local process. It might be that the upper end or the lower end of the spine is involved, or the entire spine might be involved, but it is more likely to be one joint or a few joints. I have seen some cases in which the hips were involved, perhaps the shoulder, the knee and ankle, but in the majority of cases *one* joint only is involved. It is chronic from the start, it rarely has any acute periods. The pathology involves the bone not in an atrophic way, but in a proliferative way. We have new bone produced instead of absorption and destruction of the original bone, but bear in mind that absorption does take place in the cartilage where weight-bearing occurs—in the hip, knee and ankle, but the *bone* increases.

Treatment—The treatment can be summed up in a few words. Taking the three groups that we have discussed, in a case of chronic arthritis you should if possible satisfy yourself that the joint has been infected, and, by the way, it is very difficult to identify micro-organisms in these cases. Several years ago Billings and Irons claimed to have isolated certain micro-organisms in joint cases, but that is a disputed point, as many investigators have failed to find bacteria in these joints. In the acute group the indications are to relieve the patient of his symptoms and give him a better joint, or at least a comfortable joint, as quickly as possible. Now, I am coming back to where I started. The reason that so many of these chronic infectious joints—taking gonorrhea as an example—remain chronic joints is because they are not given a chance to get well. If these joints, as soon as they are identified, are immobilized, the pain will very promptly subside and the joint slowly recover. Many of these joint cases say, "I am perfectly comfortable when sitting, but when I move around it hurts me so I have to use a cane, and limp all the time." When such a case comes under our observation we put the patient to bed, as absolute rest is the best indication. If a joint is painful, it is surrounded with fomentations, with heavy flannels wrung out of hot water. You may use dry heat if you prefer, but in my experience in a long series of these cases moist heat is much more efficacious and much more agreeable to the patient. So we put the patient to bed and apply hot fomentations, keeping them on from nine in the morning till nine at night, and then the joint is thoroughly dried off and surrounded with dry flannels and an electric pad, or perhaps a hot water bottle is placed next the flannel to keep it hot during the night. If there is any deformity the joint is very gently straightened out with traction. If the hip is involved, the leg is put up on an inclined plane, and traction is made in the long axis of the leg, and then the inclined plane is slowly lowered as the symptoms subside. We put on sufficient traction to secure relaxation of the muscles in order that we may stop the everlasting stiffness which occurs from trying to hold the joint still. When the patient is comfortable and the joint is in the best possible position for future use, it is immobilized, usually by plaster of paris. I like plaster of paris because I can use it more effectively than splints. A great objection to splints is that the patient can tamper with them himself if not comfortable, while if plaster is applied he is not likely to disturb it. Then he is allowed up on crutches, but not allowed to put any weight on that joint until it is well. The reason so many of these joints continue to be chronic for months and years is because the motion is not sufficiently restricted to give the joint a chance to get well.

It is safe to say that 80 per cent of these infectious cases get well with a stiff joint, and for that reason it is necessary to put the limb in the position of greatest use. We flex the hip and knee a little if we expect the hip to become stiff, and we abduct it so that when he walks he will put that foot to the ground and adduct the other leg. He will then not have so marked a limp. All those factors are features we must bear in mind.

How long shall we immobilize the joint? Until it is well. I am speaking now of the infectious type only. In regard to medicines, I do not know of any that has been of use to me except aspirin. During the painful period I give the patient aspirin and always give as much bi-

carbonate of soda—if ten grains of one, then ten grains of the other. This prevents the gastric symptoms and distress the patient would otherwise have. Two doses of aspirin, one in the morning and one in the evening, will keep the joints comfortable. The drug is not habit forming and it apparently has no ill effect upon the system. It is the most harmless of anything I know of that can be used for that purpose.

Within the past two years several orthopedic clinics in Vienna and Berlin have been using a new organic iodine compound known as Mirion. Little or nothing has appeared in the English literature regarding it, but numerous reports of experiments with groups of arthritis of all types have been made by the various clinics. All report improvement in a large percentage of the cases, which seems more rapid than has been observed before its use. A few complete cures are reported following from six to ten injections. The Mirion is used by deep intra-musculor injections, beginning with 3 c.c. and increasing to 5 c.c. It can now be obtained in this country at several pharmacists. I have begun its use in a small series of three cases, but it is too early to report results.

Coming to the atrophic type, the multiple type, in which the patient's nourishment is poor, we usually find the alkalinity of the blood low, the urinary acidity high. Those patients have hyper-acidity of the system, the perspiration is highly acid, and often the saliva as well. The treatment of that group is practically the same as in the first, as far as relief of pain and deformity are concerned, but in addition we try to reduce the general hyperacidity and increase the patient's nourishment. There are two very efficient ways of reducing hyperacidity. One is to give the patient hot vapor baths, such as Turkish baths or cabinet baths—anything to make him perspire profusely for half or three-quarters of an hour each day. This will reduce the acidity, but it is weakening and cannot be kept up indefinitely. The next way is to give fruit juices in the diet. If you feed fruit long enough the whole system will become alkalinized; with the fruit, we give vegetables. In most cases the acidity is relieved. There is another peculiar thing. You may examine a patient today for indican and not find a trace, and tomorrow it may be very abundant. I do not know why this is. In some cases there is ptosis or a dilated cecum. It is probable that the absorption from the intestines in those cases is very great, but it varies from day to day, so when you examine today and do not find indican, examine every other day and you may find it, and when you do find indican, it is a token of proteid decomposition in the intestines. I have become convinced that there is a great percentage of affected joints, and especially in the infectious and atrophic groups, that may be laid to intestinal toxemias rather than to infections. Goldthwait, Osgood and Swaim of Boston have been working on this subject for a number of years and all are convinced, as I am, that very large numbers of these chronic joints are due to intestinal toxemias. In the atrophic group particularly, the theory of bacterial infection in the joint has been tried out for so long that it practically has been decided that in these cases bacteria cannot be found. I hope that someone may find the cause of the atrophic type of the disease, because so far as prognosis is concerned it is the most hopeless of the three groups I have described.

In cases in which the acidity of the urine is high and the perspiration is acid, and there is no indican, I cut down the starches and give meats. But in cases where there is a distinct indicanuria we give fruit, vegetables and cereals, and no proteids except cottage cheese and buttermilk.

There is one caution I want to mention in regard to immobilization of the atrophic type. If the immobilization is continued too long, you may lose the benefit of what motion the patient has. Frequently the individual with atrophic arthritis will have sufficient motion so that he can make considerable use of the arm, so we immobilize the joint only long enough to get rid of the pain and tenderness. When these symptoms are gone I send him to the physiotherapist for massage. I am convinced that we get some improvement in those cases from that routine. But when we come to the hypertrophic type, I immobilize the joint until it is well. I have no fear of stiffening in those joints if I am sure of my diagnosis, and it is not an atrophic joint. My only fear is that we allow the patient to move the joint too soon. And along with the heat and the immobilization, the correction of deformity, etc., in the hypertrophic group I use diathermy. Many of the hypertrophic cases seem to improve more with dia-

thermy, and it certainly adds much to the comfort of the patient. A painful joint after half an hour's treatment with diathermy will be free from pain for the rest of the day, perhaps for more than one day. Along with all this, attention is paid to elimination in every way.

The atrophic type is not only atrophic, but, as I have said, there is some interference with the metabolism. We find in most cases that the metabolic index is very low. After making three or four tests for the total metabolism we find that the patient never gets the index up anywhere near normal. In those cases we have given thyroid extract, at first ½ grain daily, and finally one grain three times a day. At the present time I have under observation a patient who was given so much thyroid that her nervous system was all upset and she could not get the benefit of her food.

To sum up: Rest is most important. To relieve the pain and sensitiveness, heat is applied to lessen muscular spasm, and traction is put on to correct deformity. People ask how much weight I put on. I put on as much weight as the patient wants. I leave it to the patient because the weight should not be so great as to be uncomfortable. When the patient says, "I don't feel that weight," put on more; when he says that it makes him ache, I take off some. You will have to be guided by the patient's comfort. Then comes immobilization by some means. If you are skilful in the application of splints, use the splints; if you are more skilful in the use of plaster, use plaster.

If a joint in the lower limb is involved, the patient is not allowed to put weight on it. A block two inches high is put under the other foot and crutches are used. In those cases in which heliotherapy can be used the patient is given two or three hours of exposure each day, and in some cases nearly all day. I believe sunlight is more beneficial than quartz lamps or any artificial light. The patient must be built up with food as rapidly as possible, and what you give for food depends on what you find by laboratory examinations. In the hypertrophic types we expect that the patient will have a useful joint, but motion will be limited and the mischief which has already taken place in the joint cannot be undone.

In this short article I have tried to emphasize in a brief way the features which are beginning to dominate us in our treatment: First, differentiation of the various groups of arthritis, then treatment according to the pathology.

THE PRINCIPLES OF PHYSIOLOGY SHOULD GOVERN CASUALTY SURGERY*

R. W. McNealy, M.D., F. A. C. S.
CHICAGO

When more attention is given to the study of certain principles of normal and pathologic physiology, there will undoubtedly be many changes in our present day methods of dealing with the problems of casualty surgery. The physiologists have made many advances in unfolding the intricacies of Nature's defensive and reparative processes. The surgeons must be quick to utilize this knowledge if they too are to make progress.

In a recent article (Ann. Surg., 1925, Vol. 82, P. 540), Yates, of Milwaukee, said, "Means to fulfill therapeutic requirements and to meet economic demands can be developed by adapting practices to conform more directly with natural methods that foster the resistance, defense, growth and repair of bones." What he has so concisely said of bones may as truly be said of other tissues of the body.

The incentive for this attempt to correlate our practices with physiologic tissue activities is derived from observations made in the supervision of some 20,000 dressings and treatments given during the last year to patients of one of our larger Casualty Associations, and from similar cases observed in the surgical wards of Cook County Hospital. The opportunity of observing so large a group of closely related injuries should stimulate one to investigate more thoroughly the forces which govern the convalescence of these injured persons. We, who deal with this field of emergency surgery, should be exceedingly careful to use every means to hasten the convalescence of our patients and to simplify our technic to those therapeutic practices which have proven value. For the most part we must place our hopes in that plan of management which is based upon an understanding of the physiological forces which are active

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in the defensive and reparative processes in all normal individuals.

Let us first consider the value of the various antiseptics and germicides used to sterilize skin areas and the similar use of various chemical solutions and dyes in wounds.

There is much room for honest investigation of the merits of many of the advertised solutions now being recommended to the profession. Tinker and Sutton have recently carried on a series of experiments which should interest all. They concluded from their work that no single antiseptic can be depended upon to render a skin field sterile. This failure is to be attributed to the selective action of the various antiseptics. If one could know before hand just what organisms contaminated a given field one might so prescribe his topical applications that each strain of organism would be at the mercy of its germicidal affinity. These facts bring one to the conclusion that skin and wound sterilization is a relative affairs, rarely absolute, and, if absolute in any instance, it is so more by chance than by design.

What use may we make of the preceding discussion? The normal skin is a protective covering of the body and its powers of resistance admit of its being subjected to the action of chemicals which other tissues of the body cannot tolerate. We may, therefore, indulge our personal selection of any one of the multicolored chemical solutions and dyes now in use with the mental reservation that we are lessening the chances of infection but not absolutely sterilizing the skin field.

When we deal with wounds of the soft tissues, we have quite a different problem, since we have easily assailable tissue and not the hardy protective skin elements exposed to the action of the topical applications. For my part, I am unalterably opposed to the use of any germicidal or antiseptic solution in the recent wound itself.

The practice in my service has been as follows:

1. Remove all foreign material that can be picked out with tissue forceps or sponges.

2. Clip away or dissect out all tissue that appears likely to be devitalized.

3. Secure hemostasis.

From my observation the following factors are probably the most constant in inducing and favoring infection in the ordinary casualty wounds:

1. Devitalized tissue allowed to remain in the wound.

2. Introduction of antiseptics and germicides which are meant to destroy organisms but usually destroy surface cells throughout the entire wound and enormously increase the quantity of devitalized tissue within the wound confines.

3. Hemostasis is secured by careless crushing of much tissue other than the blood vessel wall.

4. Much foreign material in the form of heavy ligatures is introduced.

5. Suturing the wound is improperly done. The sutures are nearly always too numerous and are tied so tightly that the intervening tissue is strangulated and the wound secretions are prevented from escaping.

My next problem concerns the use of hot dressings applied to body surfaces.

The correct use of hot dressings has for some time been a question in my mind. I have no particularly revolutionary thoughts towards this time-honored practice, still there is to my mind much abuse of this procedure. I am quite certain that I see daily instances where the prolonged and thoughtless use of hot dressings has resulted in a delayed convalescence and unnecessary morbidity. Let us for the sake of clearness understand what we hope for in selecting hot moist dressings in a given case. The heat we desire because it favors hyperemia. Dilatation of the capillary bed is probably the most important reaction and if we analyze this phenomenon, we support this dilatation as being an artificial reaction comparable to that produced by nature in the first stage of inflammation. Hyperemia has as its by-activities slowing of the blood stream, at least temporarily, migration of leucocytes and escape of plastic exudate into the surrounding tissues. Our purpose in its production is, therefore, to anticipate and abet the usual reactions of tissues to infection.

Now let us understand just how far we are to carry this abetment by hyperemia. Is it possible to prolong this phase to the point where it becomes an actual hindrance? My conclusion from observations of a large series of cases is that a very considerable number of those treated by the hot dressing method are carried to the point where actual harm is done. When the

capillary bed has dilated, the leucocytes and other phagocytic cells have passed into the tissue, when the plastic exudate has filtered into the surrounding tissue until it is tense and firm, and the tissue or fixed cells have begun their reactive proliferation, then it is time to dispense with our hot dressings. In the majority of cases this phase is reached in 24 hours, in a few it may require 48 hours, but it rarely is of any aid after this time. What harm can come if hot dressings are continued? The most potent factor for harm is the increasing exudation, which, if allowed to continue, not only produces stagnation in the more compressible venules, but eventually leads to an ischemia due to compression of the arterioles.

Another condition that has struck me in these cases is the use of hot dressings in open draining suppurative lesions. If our knowledge of pathologic physiology is correct, we cannot defend this management. Many times we have seen the skin macerated, even blistered, for this edematous tissue is much lowered in resistance and in spite of our antiseptic boric solution, there have appeared multiple infected hair follicles and even small furuncles. I have seen many times acute lymphangitis begin in these new areas and spread to the popliteal, inguinal, cubital and axillary glands and produce adenitis, cellulitis, even severe septicemia.

Another calamity may be partially attributed to improper or ill-advised use of hot dressings. This is the frequent crippling seen in hands which have been incased for long periods in hot dressings. The wrists are allowed to assume a palmar flexed attitude with the thumb closely adducted. This position, if allowed to persist for any length of time, results in a very unsatisfactory hand so far as function is concerned. If hot dressings are to be used in these hand infections, the hand must be put up in a position, which, even though a partial anklyosis results, will give a fairly useful member. This can be done by putting it up in a dorsal flexion of the wrist with the thumb abducted and rotated inward. Kanavel recently called attention to this particular condition.

My point in this discussion is to warn those who are unfamiliar with the damage that may result from injudicious use of hot dressings and to again remind those who are quite familiar with this subject that the use of hot dressings is not a matter to be placed in the hands of internes and nurses. Give it your attention and study your results.

I have one more point in mind which has given me much concern during the last year. The concluding question relates to the management of fractures of the extremities, especially the forearm and hand and the lower leg and foot. I speak of these specific locations because it is fractures here that are producing the greatest avoidable economic and functional losses. It is impossible to accurately estimate the avoidable loss of function sustained by individuals suffering from the above mentioned types of fractures as a result of failure by those treating such cases to take advantage of natural physiologic aids to the repair and restoration of function.

There are innumerable crimes of treatment committed under the guise of immobilization. This is especially true of the prolonged immobilization of typical Colles' fracture of the radius, longitudinal fractures of the tibia involving the ankle joint, and fractures of the bones of the foot. In the majority of the above mentioned fractures, if good reduction is secured, there is little if any need for fixation. There is still less need for excessive passive motion. Non-painful active motion is most desired. Sir John O'Conor warns against the excessive use of passive motion in fractures involving joints. His own words are most expressive: "The most insuperable cases to tackle were intra-articular fractures of the elbow and knee joints in which callus formation—often stimulated by what I have termed the 'damnation movement' of joints—had run riot with erection of boney buttresses which nothing less than excision of the joint could shift."

Without going into a detailed discussion of the treatment of fractures, I am anxious to again remind you of several physiologic principles which must never be lost sight of when the treatment of fractures falls to your lot.

Wolf's law is a physiological reaction occurring in bones in response to functional requirements. Many apparently atrocious results, as evidenced by the x-ray, have finally shaped themselves into excellent functional results due to the natural adaptive and restorative processes inherent in our skeletal system. Make use of this knowledge and extend the limits of your early

active motion in those fractures where there is little tendency to recurrent displacement of fragments.

In my experience the disability in fractures about the wrist has been prolonged, not because of pain nor stiffness of the wrist, but from stiffness and functional weakness of the fingers.

The final suggestion which may be of interest to us concerns the circulation in injured extremities which are immobilized in casts and then kept elevated. This discussion relates particularly to fractures of the lower leg and ankle. I feel that union is many times greatly delayed by keeping these patients in bed with their limbs resting on a pillow or suspended. There can be no comparison between the amount of circulation induced in an extremity by physiologic activity and that produced by position or station, however, there is much to be gained in establishing the circulation and lessening edema by early dependency of the injured member. The patient, as a rule, complains of the swelling and discomfort at first, but soon realizes that this primary swelling lessens with each successive lowering of the limb, finally becoming negligible. This dependent position with active motion as the case permits will greatly diminish the time required in the post immobilization convalescence.

My conclusions are:

1. We may well give more thought to physiology in planning our treatments.
2. Be guided by results rather than by glowing reports from others.
3. Natural physiologic processes are still the greatest of all defensive, reparative and reproductive forces.

30 N. Michigan Ave.

THE POST-MATURE CHILD

CHARLES B. REED, M. D.
CHICAGO

"There is no such thing as a post-mature child." We have all heard this declaration and many of us have received it as a portion of the true faith. But with experience comes doubt and investigation. How is it that the period of gestation is so often prolonged? You have miscounted, is the obvious reply. But why then is the child so large? Why does it look so old? Is the uterus an organ of rigorous and peremptory function like the heart, or is it subject like the intestine to many anomalous interferences which retard or accelerate its activities? What is maturity, and what is post-maturity? These questions press for solution.

Maturity may be defined provisionally as that state or degree of development which enables the fetus to surmount successfully the perils and aggressions of extrauterine life. We may add also that a mature fetus must show the evidence of a certain physical endowment as revealed in the length and size of the body as well as in the head diameters. Without dwelling tediously upon the authorities which are accessible to you all we may set forth the almost unanimous opinion that mature babes must measure from 48 to 53 cm. in length, weigh from 5 to 9 pounds, and measure from 8.5 to 10 cm. in the biparietal and from 10 to 12 cm. in the occipito-frontal diameters of the head.

The term "post-mature' is not common in our literature and yet it is reasonable to assume that any babe which exceeds the maximum limits just given should be called post-mature just as one which did not reach the lower boundary should be and *is* called premature.

The post-mature child therefore is a large child but it is a child which has attained its overgrowth through detention in the uterus after it has become mature.

If we admit these definitions we must also accept the principle that a post-mature child is abnormal and, therefore, a proper subject for obstetrical study and possible regulation.

May we now go a step further and assert that a large child, a child over nine pounds, a post-mature child if you please, although a source of pride to the parents should by that same token be a reproach to the obstetrician.

It is a source of pride to the parents partly through tradition and partly through the comfortable but, as we believe, the erroneous opinion that such a child has a better start in life. The obstetrician also is gratified since in his heart he realizes that he has gambled for a great prize and the cards have fallen favorably for him. He knows only too well the dangers to which both the mother and child have been exposed and justly he congratulates himself upon their escape.

He is familiar with the prolongation of labor which these large babies exact and the conse-

quent strain on the fortitude and physical endurance of the mother. He recalls cases also in which the uterus is overdistended, the pains weak and shallow or, if strong, where the membranes rupture prematurely and a dry birth succeeds. He may remember cases where the large, firm head did not easily mould or engage and when

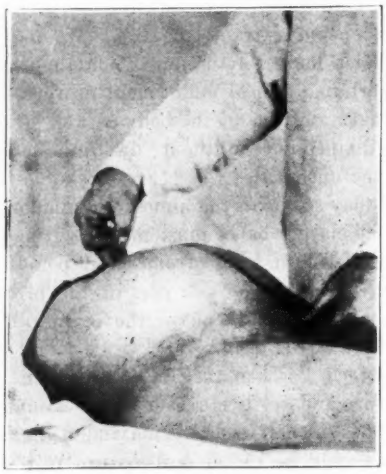

Fig. 1. The McDonald Maneuver. From the upper border of symphysis to highest point of fundus. The tape at fundus does not follow down into depression but is held even with the upper rim of fundus.

finally forced through the brim the soft parts were overwhelmed and the ultimate delivery, whether spontaneous or, as more commonly happens instrumental, was accompanied by extensive trauma and lacerations. Fistulae from the pressure of the large slow moving head are not unusual and maternal fatalities must be expected to develop out of the long labor either from infection, hemorrhage, or the extensive and violent instrumentation.

The child also is endangered by the relative shrinkage in the blood supply, by strangulation at the vulva or by the prolonged cerebral compression. Asphyxia, intra-cranial hemorrhages, skull fractures and paralyses are always near, while craniotomy and evisceration are not far removed.

These catastrophies do not depend so much upon the mere weight of the child as upon the inordinate volume in which the parents take pride. It is this bulk which retards progress. It is the firmness and solidity of the post-mature head which prevents moulding and delays engagement. It is the greatness of the mass which overdistends the parturient passage and compels the maternal morbidity or the fetal fatality.

And to what purpose? Does the unusual size of the child betoken a better inheritance or a more favorable entry upon life? It does not seem so, for the extra weight is rapidly lost. A babe of nine or more pounds will lose from one to three of those pounds in the first three days post partum, while a seven and a half pound babe will lose regularly about nine ounces and rarely more than fourteen in the same length of time. This means that the overgrown child at the first opportunity simply squeezes out the fluid and fat cells which have been stored up from lack of opportunity to expend them. Maturity comes to the child *in utero* just as it comes to the adult and during a protracted uterine life the nutritional impulse exceeds the expenditure and in consequence the tissues are distended with fat and fluid which serve only to clog the organs, impede the vital functions and jeopardize the delivery. As soon however, as the child is born the conditions of post-maturity no longer

Fig. 2. The Perret Maneuver. The poles of the head are found by the fingers and the perimeter applied by assistant.

fetter the physiology. The tissues relieve themselves of their unnatural burden and return to normal. The child "cures" itself of its excessive obesity by rapid shrinkage and a typical healthy existence begins.

Now note, please, that we do not claim that all babes of nine pounds or more are post-

mature. By no means. But it will be well to recall that according to v. Winckel, three-quarters (74.8%) of these heavy babes have passed the estimated dates of their individual maturity. Such date of course may not coincide with the date estimated as proper for their delivery for some babes mature early and others

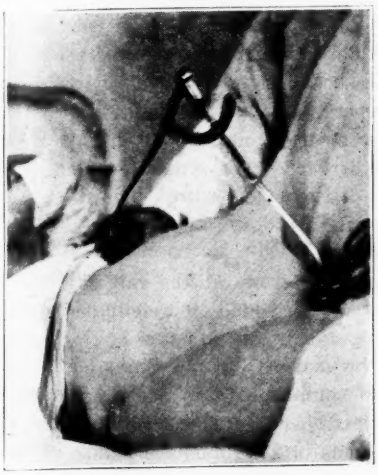

Fig. 3. Ahlfeld Maneuver. One tip of perimeter on upper pole of child. The other inside the vulvar slit is pushed up until it impinges on upper border of symphysis.

late. The factors of fetal nutrition are extremely important in this connection as well as the potentials of heredity and in many cases the unexplainable prolongation of pregnancy. Whatever the cause, the man who regularly measures his babies will often find one which is more mature at the eighth month than another at the ninth or tenth. Many of us can recall cases in which a four-pound babe has been born long after the date set for the confinement and another of eight and a half or nine pounds which was at least three weeks before the calculated time.

With all the time, energy and talent which has been devoted to the problem we do not yet know the exact duration of human gestation. Nor are we likely to answer this question until we can determine the moment when fertilization of the ovule occurs or the division of the nucleus begins.

We have learned that spermatozoa may remain active and potent in the congenial environment of the female mucosa for at least three to seven days and we know that conception may occur as well before the first period missed as after the last one present. The whole of our knowledge however comes finally to this, that the human female requires about 275 days for gestation with an upper and lower limit of 321 and 268 days respectively. This irregularity doubtless provides an ample latitude for the acquisition of maturity in a majority of the babes but it also produces a definite percentage which go over time. Parvin thought this number would reach 6 or 8 per cent. That is to say, the pregnancy is prolonged and the fetus becomes post-mature once in approximately fourteen cases. Whether the onset of labor be determined by accident, or through the influence of a placental principle, or in consequence of impulses from the endocrine glands, we do not know. We do know that the event, when left to nature, is a matter of extreme uncertainty. The long retention of a lithopedion in some instances, the more frequent imprisonment of the living fetus beyond the average term as well as the occasional but undoubted occurrence of premature labor all indicate that muscular irritability is a factor but also that the uterus has a tendency to functionate just as readily by caprice as by card.

If we admit, however, the existence of post-maturity and the possible perils, what are we to do about it? Can we determine the presence of maturity or post-maturity and should our interference, if indicated, be prophylactic or decisive, expectant or resolute?

To be sure, the boundary which we have set between what is generally accepted as normal and what we have assumed to be pathological is purely arbitrary, but possibly if we clash together a few of our reasons we may be able to establish a plausible proposition.

In the agricultural districts where the writer was reared it was customary to estimate the degree of ripeness of the fruit by its size and condition rather than by the time it had hung upon the parent stem. Does it seem irrational to determine the maturity of the human fruit by the same unequivocal test? But can we do this? Have we any reliable methods of measurement and definite standards of comparison?

According to our definition the maturity of the fetus is represented by certain physical conditions which, when present indicate that the purpose of gestation has been fulfilled. These

beacons, as we have stated, are the length, the weight and the fetal head diameters.

When we took our academic work we were shown in a more or less perfunctory way how to take the measurements of the pelvis but we were not taught to measure the babe and in fact were assured that this feat was impossible. In other words, we were sent to the firing line with a rifle whose calibre was approximately known and with a heterogeneous assortment of cartridges of no certain or even ascertainable dimensions. They might fit or they might not. If they did, the problem was solved to the gratification of the parents but if they did not fit the resulting disaster was accepted as the act of Providence.

However times have changed and while it is not generally known, or taught, it is none the less a fact that at present we may determine with extraordinary accuracy the size of the projectile which is to pass a human canal of any appreciable size. In fact we can measure the length and the size of the child and the diameters of the head with *more* certainty than we can measure the pelvis. It follows that a diagnosis of fetal maturity can be definitely assured and this knowledge can be used under all circumstances as a safer and more reliable basis for the estimation of the proper date of confinement than the irresponsible menstrual history or a carefully observed date of quickening. The diagnosis will rest upon measurements made by the McDonald, the Perret and the Ahlfeld methods, all of which are easily learned, readily practiced and highly dependable. Furthermore these procedures are a delightful adjunct to our art, for when the final measurements are made, and recorded on the day of confinement we have only to await the termination of the case to verify the correctness of our technic.

The length of the babe is obtained by Ahlfeld's procedure which has long been known but rarely practiced as a routine, and seldom or never taught. One tip of the pelvimeter is placed upon the upper pole of the child and the other upon the upper border of the symphysis, inside the vulver slit, which is uplifted to the height of the osseous border. From the reading thus obtained we deduct 2 cm. to allow for the thickness of the abdominal wall and multiply the result by 2. This is the length of the child in centimeters.

In our experience the post partum figures tallied exactly with the ante partum estimate in 37 per cent. The variation was 0.5 cm. in 24 per cent. and less than 1.5 cm. in 29 per cent. Thus in 90 per cent. of our cases the error was inconsiderable.

The size of the uterus in reality designates and sets forth the size of the child. By Spiegelburg's figures the fundus must extend 34.5 cm. above the symphysis when the babe is mature. McDonald found that a mature fetus required a uterus whose fundus would extend 35 cm. above the upper border of the symphysis. McDonald's measurement is made with a tape from the upper border of the symphysis along the convexity of the abdomen to a point even with but not extending down into the depression above the fundus.

The child grows at the rate of 0.75 cm. in length and ¾-pound in weight per week as an average, so it is easy to figure by this method not only the maturity of the child but the proper date of confinement. We found this procedure to be extremely reliable. McDonald also uses this means to determine the month of the pregnancy. He divides the height of the fundus obtained as above in centimeters by 3.5 and the result is the month and its fraction of the gestation.

The problem of the fetal head diameters is one of absorbing interest. Only two, of course, are possible, the occipitofrontal and the biparietal, but fortunately these are the ones most needed. They are obtained by Perret's maneuver. Thus the occipitofrontal is measured as it lies more or less transversely across the inlet *without making any allowance for the thickness of the abdominal walls.* From this result the *biparietal is estimated by a system of deductions* according to a scale suggested by Perret and elaborated by Stone, McDonald and Reed. If the occipitofrontal measures 12 cm., for instance, 2.5 cm. is deducted to get the biparietal. From 11.5 cm. occipitofrontal we take 2.25 cm., from 11.25 we take 2 cm. and from 10.0 to 11.0 cm. we take .5 cm. to get the biparietal. We used this scale successfully for several years and then O'Keefe of Kansas City devised a simple formula which he expressed thus

$$\frac{OF + 7}{2} = BP.$$

It is delightfully accurate.

In our series the post partum measurement of the occipitofrontal tallied exactly with the ante partum estimate in 40 per cent. The variation was 0.25 cm. or less, in 34 per cent., and within 0.5 cm. in 24 per cent. and erred by 1 cm. in but 4 per cent. of the cases.

The biparietals obtained from the above occipitofrontals were found post partum to be exact in 36 per cent., within 0.25 cm. in 31.7 per cent. within 0.5 cm. in 24 per cent., and to vary by 1 cm. in but 6.5 per cent. of the cases.

It is obvious that these differences are too slight to affect the diagnosis to a detrimental degree. Our tests are fallacious and unsatisfactory in cases of hydramnion and extreme obesity but on the other hand twins and lightening can often be recognized when the tape is regularly employed.

We have at our command, then, the means of measuring both the size of the pelvis and of the body which is to pass through it. Experience has shown only too often that the delivery of an oversized babe is associated with peculiar dangers both to the mother and child and we believe these hazards should be and can be avoided. We are convinced that the additional weight of the child is in no way an advantage but regularly a detriment in the delivery.

Our knowledge at present sustains the belief that the onset of labor is wholly accidental and while it may occur two weeks ahead of the estimated date without unusual danger to the mother or child yet postponement of delivery until two weeks after the maturity of the child may be the cause of serious complications.

The logic of our position demands that the pregnancy be watched carefully and the fetus measured at frequent intervals during the last weeks. If the maturity of the child is beyond question the pregnancy should not be allowed to continue indefinitely. The purpose of gestation we must admit is the production of a mature child and when this is accomplished the normal end of pregnancy is attained. The further retention of the fetus is no longer profitable and rarely permissible.

Termination of the pregnancy can be easily and safely brought about whenever the fetal maturity is assured. It is true that the interruption of the pregnancy, even at term, is a violation of our cherished traditions but admitting its sacriligious aspect we do nevertheless maintain its legitimacy. We do not wish to become more dramatic but more careful—we do not wish to complicate our technic but rather to simplify it by intelligent examination. We merely prepose a new indication for the induction of labor, an indication based on painstaking observation and a high consideration for the welfare of the mother and child.

To those who are accustomed to stimulate a sluggish bowel it will not seem unreasonable to inaugurate the contractions in a dilatory uterus and those who recognize the desirability of opening appendiceal abscesses are already convinced that it is safer to guide and control the phenomena of the body than to await the haphazard and often misdirected operations of nature.

Such a management of a case requires more skill, more care and a higher responsibility. But no man who realizes the gravity of the problem can be content to allow his reason to be thwarted and his patients endangered through the whims and caprices of an unintelligent hollow viscus.

30 N. Michigan Avenue.

COMMON ERRORS IN THE CARE OF INFANTS

MAXWELL P. BOROVSKY, M. D.

Instructor of Pediatrics, University of Illinois Medical School; Attending Staff Cook County Hospital; Associate Attending Pediatrician, Mt. Sinai Hospital.

CHICAGO

I am prompted to prepare this paper by the frequent encounter in private and dispensary practice of many simple but flagrant procedures indulged in in the care of infants and children.

1. *Washing the Baby's Mouth*—Washing the baby's mouth is an old-fashioned idea brought down from past generations and is entirely improper. Why should a baby's mouth be washed? Are there recesses in the infant's mouth where food may lodge, undergo putrefaction and bring about pathologic processes as occurs in the adult? The answer to this is, "No." The mother may wash the baby's mouth either because her family physician tells her to or her mother advises her that it is the proper procedure or she notices a thin white coating on the tongue after the ingestion of milk. What happens to the mucous membrane when the mouth is cleansed with the usual boric acid solution swab? The external layers of the oral mucosa are rubbed off more and more each time. The more the mucous membrane is denuded the greater is the amount of milk ac-

cumulation on the roughened tongue and the more vigorous becomes the cleansing. An avenue of infection is opened by the lack of the protective outer layer of the mucous membrane.

It is seldom that we observe a case of thrush or ulcerative stomatitis in an infant whose mother has not been over-indulgent in the mouth hygiene of her offspring. The inevitable answer to the question of mouth cleansing directed to a thrush-infected infant's mother is, "Why, yes, Doctor, I wash the baby's mouth every time I bathe him," this after she has been apparently insulted by the question as to whether she ever washed the baby's mouth.

An infant's mouth should not be washed, and if there is a small amount of white accumulation on the tongue after nursing, water may be given to remove this material or it may be left alone without detriment to anything but the mother's pride.

After the thrush develops in the wake of overzealous hygiene, cleansing of the mouth with sodium borate in glycerine or touching up of the lesions with silver nitrate is necessary, but the applications must be very gentle, for vigorous rubbing will further denude the mucous surface.

2. *Treatment of Colds*—Treatment of "colds" by the customary initial dose of cathartic is an incorrect procedure. It is true that many infants become constipated with an upper respiratory infection, but the majority develop a diarrhea due to the irritative action of mucus swallowed from the infected rhinopharynx. A cathartic tends to irritate the bowel still more, weaken the infant by dehydration, and secondarily, constipate the patient.

It is a better procedure to treat the acute infection and resort to enemata or suppositories for the accompanying constipation.

Mothers will often ask whether they should bathe the baby while it has a cold and many an infant is denied a bath for a month because it has a slight cough or coryza. The mother should be advised, of course, that she should bathe her baby every day as she had been accustomed to, just so the child is not exposed to a draft and is not chilled.

3. *Cathartics*—In the treatment of diarrhea in infants the use of an initial dose of cathartic is contra-indicated. The diarrhea is undoubtedly accompanied by an enteritis, due to whatever cause, and an irritating action as produced by the cathartic is unquestionably harmful.

The determination of the cause of the diarrhea is of first consideration. In the great majority of cases this is due to an upper respiratory infection and not to the much-heralded "indigestion." The mechanism of the production of the diarrhea is either by the irritative action of the swallowed mucous or the relative overfeeding by the lowered tolerance for food produced by the infection.

If it is due to overfeeding in quantity or, as is frequently the case, in quality, particularly of carbohydrate, this should be treated as such. The recent addition of vegetables or other coarse foods to the diet may be a factor, as the mechanical action of these foodstuffs in the bowel may instigate a diarrhea. The big percentage of cases that are secondary to "colds" will clear up with no alteration in diet except as to quantity adjudged by the infant's appetite, and the treatment of the acute infection. The use of barley water and skimmed milk as the diet for the parenteral infections usually cares for the diarrhea.

4. *Swabbing the Throat*—Swabbing of the infant's throat for tonsillitis or pharyngitis is rarely indicated. The pharyngeal mucous membrane is normally delicate in an infant and in the presence of infection must necessarily be more marked so that application of strong drugs by swabbing is wrong. The trauma makes the development of peritonsillar abscess and secondary infection more likely. Practically all these cases respond to salicylates and citrates which may be given in relatively large doses because of the great tolerance for these drugs. Even in cases with severe edema of the pharyngeal mucous membrane or where the tonsils are so large and infected that they meet in the midline, swabbing should not be resorted to. Cold compresses or ice-collar will be more effective and less detrimental to the patient's tissues.

In children old enough to gargle this procedure is valuable as a cleansing measure. The benefits from this are purely mechanical, for we are unable to use solutions strong enough for bacterial action in these youngsters. One of the best and simplest gargles is sodium bicarbonate in lukewarm water.

5. *Treatment of Constipation*—"Doctor, what shall I do when my baby is constipated?" is a

very frequent question, and the busy practitioner is wont to pass it off with, "Give it a teaspoon of castor oil," or he might use slightly better judgment and advise milk of magnesia. There is certainly some reason for this constipation.

Let us inquire into the cause. It may be due to underfeeding in quantity or quality, insufficient fluids, spasm of the anal orifice due to fissure, atony of the bowel wall, weak abdominal musculature. By far the greater percentage are due to underfeeding of quantity or quality, usually of carbohydrate, or foods with an insufficient amount of bulk.

The following procedures are the more important ones employed depending upon the cause:

1. Addition of more sugar or transfer to more laxative sugars in the milk formula as from dextrimaltose No. 1 to No. 3 or to cane sugar. Addition of a teaspoon of honey to a few bottles or a teaspoon or two of malt extract will often aid the natural evacuation of bowel contents.

2. Use of cereal waters, as barley, or preferably oatmeal water, in the milk formula.

3. Fruit juices, orange and prune, the latter being many times more laxative than the former. In fact, many infants are constipated by orange juice, but the use of this juice plus a few particles of orange pulp may be efficacious. Prune juice is really a concentrated sugar and serves very well as a laxative food.

4. Cereals—farina or oatmeal—will furnish more bulk to the food.

5. In infants five months of age, mashed carrots or spinach may be used or vegetable soup with finely divided vegetables at six months. Graham crackers, apple sauce and corn starch pudding may be added at eight months. If the addition of these articles to the diet are not effective, mineral oil, 1 to 3 teaspoons a day, may be administered with the bottle feedings.

Suppositories may be efficacious, particularly if the retention is due to spasm of the anal orifice. These may be used daily without danger of any injury to the parts or of aggravation of the constipation. Enemata may be resorted to in cases of severe retention with gaseous distention and severe colicky pains. Gentle massage of the abdomen from the cecum all along the colon down to the sigmoid is a mechanical aid. Cod-liver oil will be of value if there is present atony of the bowel due to rickets.

6. *Granuloma of the Umbilicus*—The navel should be entirely healed when the baby leaves the hospital, usually the tenth day. Failure to heal by that period is most commonly due to granuloma of the umbilicus. The exact cause of this condition is not known, but it is most likely due to improper tying of the cord, whereby the umbilical stump is too long, or failure to make the ligature tight enough completely to cut off the circulation. This excess of tissue becomes infected and the production of granulation tissue is stimulated.

Discharge from the umbilicus after four to six weeks is usually due to this, and proper treatment should be instituted. The infant should not be given a tub bath, the body being cleansed only by sponging. The granulation should be tied off at its base with twisted silk, and boric acid powder sprinkled over the lesion. If tied properly the granuloma will dry and detach itself in about forty-eight hours. If a small stump remains it should be treated with a silver nitrate stick.

7. *Milk Formulas*—We often encounter ridiculously dilute milk formulas written for infants during the first month of life. Mixtures as milk 5 oz., water 15 oz., sugar 2 teaspoons, are not uncommonly met with. It is physically impossible for an infant, no matter how small, to even maintain its weight on such a mixture. The caloric requirement is not furnished.

It is seldom that less than a half and half mixture is necessary. These infants do better on this strength of milk mixture than on one-third mixtures. The carbohydrate tolerance is great and this ingredient should be furnished up to the tolerance point, the danger signal being the development of frequent, watery bowl movements.

8. *Boiled vs. Unboiled Milk*—It is a generally accepted fact among pediatricians that infants should be fed boiled milk, the arguments against the use of boiled milk being easily disposed of. Boiling the milk so alters the curd as to make it much more easily digestible, and destroys the bacteria. These are the two most important alterations. The destruction of the antiscorbutic vitamine is overcome by the addi-

tion of orange juice to the diet at 5 or 6 weeks of age.

Even certified milk, in spite of its cleanliness and low bacteria count, should be boiled for the same length of time, two minutes, to so change the curd as to make it more easily digested by the infant.

9. *Colic*—Colic is due to gaseous distention of the bowel with increased peristalsis and spasm of the bowel. It is primarily due to overfeeding, whether it be the fat or the carbohydrate in excess. The breaking down of the fats to acetic, propionic and butyric acids causes intestinal irritation, accounting for the pain and frequent stools. The bacterial decomposition of the carbohydrates accounts for the vast accumulation of intestinal gases. The true picture of colic is well known to everyone, but the confusion of colic with underfeeding is the great stumbling block. A large percentage of so-called "colic" cases are overcome dramatically by complementary bottle feedings, as a supplement to the breast milk.

The clinical pictures of these two conditions are quite similar except that the colic baby is often better nourished than the underfed patient, but the reverse is very frequently encountered. The strict adherence to feeding rules often leads one astray in not giving the patient sufficient consideration and the baby continues to cry for more food when all it may get is a few drops of paregoric.

Every infant is an individual feeder and many require much more than the conventional 1½ ounce per pound per 24 hours. The fallacy of weighing infants before and after breast feedings should also be emphasized. The weighing does not give information as to the concentration or the composition of the mother's milk and many infants are under or overfed by this practice. Let the patient be the test, for some month-old babies require 3 ounces at each feeding, while others require only 2 and others as much as 4½ ounces.

When in doubt, offer the infant a complementary feeding of the proper proportions and it will judge for itself whether it has had enough or not. Nature has ample measures at her disposal to care for the slight excess the patient may consume. Remember always that in infant feeding, underfeeding is much more common than overfeeding.

Examination of breast milk is a waste of time, money and anxiety. Again, let the patient be the test as to whether it receives sufficient nutrition from the breasts, without regard for composition of the food. The threshold of safety in the feeding of breast milk is very high and the tolerance great.

Preserve the lactation as long as possible, at least until time for weaning, nine months, and do not wean the baby because the mother tells you that her milk looks just like water. Make up the deficiency, if there is any, by the next best food, which is cow's milk.

10. *Care of Caked Breasts in the Newborn*—The expression of caked breasts of the infant is a dangerous procedure. A certain amount of secretion in the breasts of the newborn is physiological. Chemical analysis of this material has shown it to be essentially the same as adult milk, but grossly it resembles colostrum. The material in the breasts will dry up and disappear naturally in a week or ten days with no danger to the tissues, or if aided by the application of a firm binder over the chest wall.

Expression of the breasts tends to stimulate the reformation of the secretion and the tissues are so traumatized that infection is very likely to occur. The manipulation frequently leads to the development of a mastitis which may be followed by abscess formation. The process may then spread and produce a diffuse phlegmonous inflammation, followed by septicemia, and terminate fatally. This furnishes us with another example of the harmful results of excessive practice of hygienic measures.

11. *Teething*—Teething is a normal physiological process and must not bear the brunt of the attack of errors in diagnosis or failure to observe the accompanying pathology. Pressure in the gums from erupting teeth does cause pain in the gums, irritability, restlessness and loss of appetite, but it does not cause fever, diarrhea, constipation, convulsions and a long list of pathological conditions attributed to this natural process.

As an accompaniment of teething, we may have any diseased condition of the body. The susceptibility of the infant to infection during this process may, however, be increased. We all know of many infants that have a cold and a

cough every time a tooth erupts, but the teething does not cause this cold; it is secondary to the dentition.

The sequence of events, to my mind, is this: The pain and irritation of the gums due to the pressure of the tooth approaching the surface causes the infant to hold its mouth open, for pressure of the gum surfaces together is painful. It bites on its fingers and every available toy, thus allowing a ready avenue for infection. The resistance of the infant is lowered by its lack of proper rest, due to the irritation in the gums and its failure to take its food well.

The most common infection in infancy and childhood is pharyngitis, and the pharynx of the teething infant is fertile soil for the invading organism. From the pharynx the infection may travel just as it does in any other case of pharyngitis, namely, to produce otitis media, bronchitis, coryza and, in severe toxemias, convulsions from meningismus.

Vomiting is frequent in teething infants, not from pressure in the gums but from the secondarily infected rhinopharynx, and constipation and diarrhea are also due to the latter condition. The fever is due to the upper respiratory infection and not the erupting teeth.

It is fallacious and improper from a diagnostic and therapeutic standpoint to attribute these phenomena to teething, and if one looks closely he will usually find an accompanying pathologic picture with the dentition.

310 South Michigan Avenue.

ROSEOLA INFANTUM

EXANTHEM SUBITUM; THE CRITICAL PRE-ERUPTIVE FEVER

REPORT OF 15 CASES

ALFRED S. TRAISMAN, B. S., M. D.
Instructor in Pediatrics, Loyola University; Supervising Physician, City Infant Welfare.
CHICAGO

Roseola infantum is a very common disease, occurring in infants and small children, which cannot be recognized or diagnosed unless one is familiar with its symptom-complex. It is in order that this disease may be recognized and not mistaken for German measles or measles, as it is so often, that this paper is written, with the report of 15 individual cases.

Roseola infantum is an acute disease, occurring very frequently in infants and small children, recognized by its sudden onset, abrupt rise in temperature, which has a tendency toward morning remissions, irritability, red throat, gastric disturbances, and the sudden appearance, two to four days after onset of temperature, of a maculo-papular rash, which is confluent, at times discrete, being most marked on the face, chest and abdomen; a sudden fall of temperature at the onset of rash, and the disappearance of the rash in 24 to 48 hours, with no known complications or sequelae as a result of this symptom-complex.

Zahorsky,[1-2] who was the first author in America to describe this disease as a clinical entity and who separated this symptom-complex from the great number of other exanthems of infancy, gave the nomenclature "Roseola Infantum" to this disease.

Since the appearance of his articles in 1910 and 1913, there have been a great number of cases reported in the literature and many authors have described this disease, but very little has been added to what Zahorsky described a number of years ago. However, there has been some controversy regarding its nomenclature.

"Pseudo-Rubella" was the name gaven to it in 1916 by Thompson Westcott.[3]

"Exanthem Subitum" was submitted by Veeder and Hempleman,[4] who also showed the presence of a leucopenia and a lymphocytosis in these cases.

Heiman,[5] in a splendid article written a short time ago, gives a complete review of the literature and discusses this disease in detail. He states that the terms "Roseola Infantum" and "Exanthem Subitum" have not yet attained the association of tradition and are not meaningful terms to the medical profession. He suggests the term, "The Critical Pre-Eruptive Fever," a name which would carry a diagnostic note to the doctor and a name which embodies the cardinal symptoms.

Zahorsky,[6] in a letter to the editor of the *Journal, A. M. A.*, states that the term "Roseola Infantum" gives two characteristics of the disease: its efflorescence and its almost exclusive occurrence in infants. It is acceptable to mothers and grandmothers, since the term "Roseola" was used by older practitioners. It may be translated as the "Rose" rash of infants. He states that the term "Roseola" has been abandoned by

dermatologists and can cause no confusion. The term "Exanthem Subitum" has many objections as Kuh and Garvin[7] have so well stated, "this name will be a misnomer when the medical profession becomes familiar with the disease, and especially its early recognition, for then the exanthem will not be 'subitum,' or unexpected." Zahorsky also writes that two other diseases have critical pre-eruptive fevers and the rash is so often sudden and unexpected, namely, variola and dengue. He states also that "Exanthem Subitum" does not offer an acceptable translation or abbreviation. "Roseola Infantum," however, is now recognized as a distinct clinical entity, a common disease in infants, more frequent than other well-known established exanthems.

From the above, one is inclined to continue to use the term roseola infantum, as it is a simple nomenclature and can be easly explained to the mother.

The fifteen cases which are reported here have been seen over a period of less than five months. All of the cases have occurred in infants, ranging from seven months to twenty months of age. Of these, seven were males and eight were females. There is no history of contagion in any of these cases and therefore the incubation period is unknown. The onset was sudden in all, with the appearance of a high temperature, ranging from 101 degrees to a 104.5. In several of the cases, the temperature showed a typical morning remission which suggested the possibility of a pyelitis, especially in the female infant. In all of the cases, however, the urine was negative. Marked irritability was present in the majority of the cases, a red inflamed throat was present in all. Cultures taken of the throat in several of the cases showed the ordinary bacteria present. One infant had an otitis media; one infant vomited several times at the onset of this disease, and one had a diarrhea, which cleared up in about two days. No cough, rhinitis nor conjunctivitis were seen in any of the cases. Glandular enlargement varied. A few cases showed cervical and submaxillary adenitis; a few cases showed a post-auricular adenopathy. In five of the cases in which blood examinations were made, the white count was generally low, one case showing a leucopenia of 4,700. Lymphocytosis was present in all examined. The maculopapular rash which showed its appearance in all of the cases came on suddenly, and with it occurred the disappearance of the high fever. In eight of the cases the rash came out on the third day after the onset of the disease; in three cases, on the second day; in two cases, on the fourth day, and in two cases on the fifth and sixth days, respectively. There were no complications of any kind following this disease. After the rash had faded, within a period of 24 to 48 hours, all symptoms had disappeared, and the infant was perfectly well.

REPORT OF CASES

Case 1. Baby E. F., 10 months old, female. First seen on May 1, 1925. Temperature 103.8 rectally. irritable, throat red, the right ear drum inflamed. On May 2 temperature, 102.4, ear normal, throat still red, baby is bright and active. On May 4, a maculopapular rash appeared on the abdomen, chest, and mostly on the face. Temperature normal. Slight postauricular adenopathy; rash disappeared in eighteen hours, child perfectly well.

Case 2. Baby L. A., female, 10 months old. First seen on May 20, temperature, 102.6, irritable, throat red; culture of throat negative. White count 7800. On May 22, baby was seen again; temperature was then normal, and a maculo-papular rash was present all over the body, most marked on the face. Rash disappeared in 24 hours.

Case 3. Baby B. B., male, 19 months old. On June 23, 1925, the baby was first seen. It had been sick for one day previous; temperature was 101, and the examination was absolutely negative except for a slightly inflamed throat. On June 24 and 25 the temperature continued from 101 in the morning to 103 at night. On June 26 the temperature dropped to normal and a maculo-papular rash appeared, which disappeared in 36 hours.

Case 4. Baby M. J. S., female, age 20 months. Seen on July 3, 1925. Baby had been sick for three days with a high fever which rose in the evening and was down in the morning; when seen, it had a temperature of 102.6, it had enlarged submaxillary glands, and epitrochlear glands. The throat was markedly inflamed. On July 4 the temperature dropped to normal and the rash appeared. The next day the child was well, and rash gone.

Case 5. Baby P. E., male, 9 months old. First seen on July 5; temperature 103.2, vomited twice, throat red, July 6, temperature, 102.4, throat still red, otherwise baby is active and eats well. July 7 temperature normal, maculo-papular rash on face, postauricular gland on left side definitely palpable. Rash gone in 24 hours. Baby well.

Case 6. Baby S. E., female, 11 months old. Baby became sick on July 22, 1925, with a high fever and restlessness. Was seen on July 23, had a temperature 102.6; throat red, cervical, post-auricular and submaxillary glands enlarged. On the night of the same

day the rash appeared, temperature dropped to normal and the baby felt well. The rash faded in 48 hours.

Case 7. Baby F. M., female, 12 months old. Seen on August 1; temperature 102.6, five and six loose green stools that day. Examination was negative except for an injected throat. Child was treated for the diarrhea. On August 5 the maculo-papular rash appeared first on the neck, and then on the face. The temperature which continued high for four days dropped to normal. The rash faded in 24 hours.

Case 8. Baby R. A. P., male, 15 months old. Seen first on August 7, 1925; temperature 103, baby restless and constipated. Examination negative, except for an acute tonsillitis. August 8th, temperature 101, child about the same. August 9 temperature normal, rash appeared on face. August 10, rash fading, temperature normal, child well. White count 8300.

Case 9. Baby A. R., female, 13 months old. Seen first on Sept. 14, 1925. The history was, that three days ago, the baby became sick with a temperature of 104, no irritability and no other symptoms. She ran an evening temperature of between 102 and 103 for three days. When seen, temperature was normal but she had a marked diffuse, confluent maculo-papular rash all over the body, most marked on face. She had definite circumoral pallor. Throat and tongue appeared normal; no rhinitis; no cough. Rash disappeared on the next day. Baby perfectly well.

Case 10. Baby E. P., male, 12½ months old. Seen first on September 16, when baby had temperature of 101 rectally, had vomitted once and was very irritable. On examination, the throat showed a slight redness, the urine was negative, and he had a white count of 4700. On September 17 he was seen again and he had a temperature then of 103.4,—throat was still red. On September 18 the evening temperature was up to 104.2 and the next morning it was down to 101. On September 19, temperature was 103 at night and normal in the morning. On September 20 a maculo-papular rash appeared about the face and neck and the temperature came down to normal. The rash disappeared in 24 hours.

Case 11. Baby J. L., male, 14 months old. Seen on September 16, child was very irritable; poor appetite; temperature 102.6. Examination was negative except for an inflamed throat. On September 17 the temperature was 101,—culture of throat was negative, white count 7500. On Sept. 18 the temperature was normal and a maculo-papular rash was seen all over the body. The rash disappeared in 24 hours.

Case 12. Baby R. F., female, 17 months old. Seen on September 30. The history obtained from the mother was that the child on September 25 became irritable and had a temperature of 103.8. The fever continued on September 26 and 27. When seen the temperature was normal and a beginning rash was noticed about the ears and cheeks. On Oct. 1 the rash was out completely over the face, chest and abdomen, and the temperature was normal. The baby was well the next day.

Case 13. Baby J. M., female, 12 months old. On August 30 child became ill with a temperature of 104.5. The throat was very red; a culture taken at that time was reported negative. On September 1 the temperature was 103 in the morning and 104.5 in the evening. On Sept. 2 a rash appeared about the face; temperature was normal. The rash was gone in 36 hours.

Case 14. Baby A. L., male, 8 months old. Seen on September 20. Had been sick about two days with a high temperature and marked irritability. When examined baby had a temperature of 103.6 and the throat was very red. A culture taken at that time was reported negative. On September 21 a maculo-papular rash appeared and the temperature dropped to normal. The rash disappeared in 24 hours and the baby was perfectly well.

Case 15. Baby L. T., male, 13 months old. Seen on July 18. History obtained from the mother was that the baby had been sick for two days with a temperature ranging from 101 in the morning to 103.2 at night. Upon examination temperature was 102.6 and the throat was very red. On September 19 rash appeared, temperature dropped to normal and the child was well. The rash faded in 24 hours.

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6346 N. Clark St.

HEART BLOCK FOLLOWING GRIPPE INFECTION

SAMUEL J. TAUB, M. D.
Attending Physician, Cook County Hospital. Associate in Medicine, Northwestern University Medical School
CHICAGO

Cases of heart block following influenza complicated by pneumonia are not uncommon. Cockayne[1] reports nineteen cases of bradycardia due to a condition of partial heart block, all of which had pneumonia complicating influenza. No case of uncomplicated influenza developed heart block, although bradycardia was frequently met with during convalescence.

Bass[2] reports several cases of cardiac irregularity, especially extra systoles following tonsillitis and grippe. No permanent or ill effects on the heart could be determined.

The following case is of interest in that a condition of heart block complicated a grippe infection in a previously normal boy, and com-

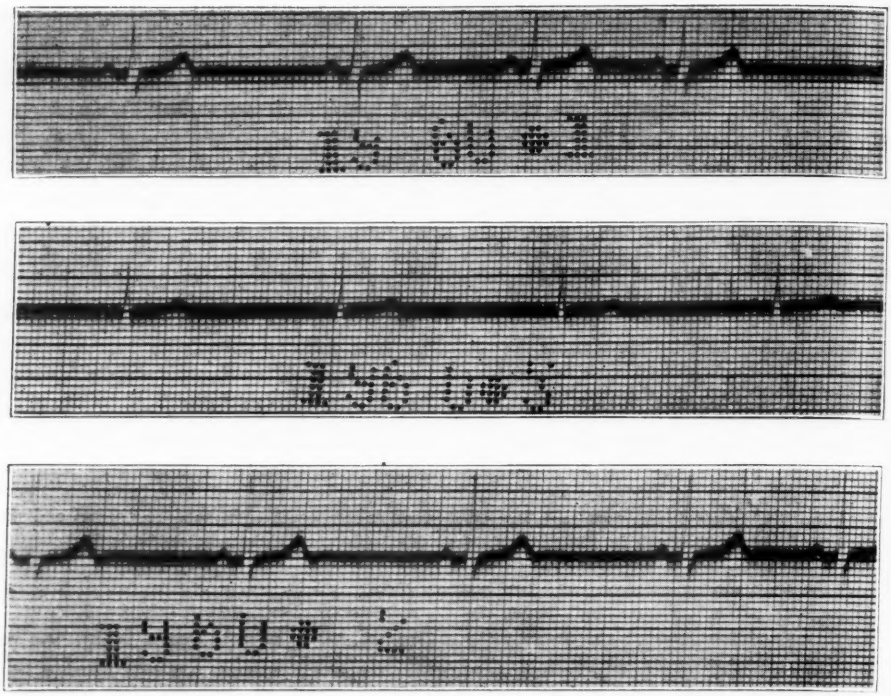

Fig. 1-3. Heart block. P-R interval 0.12 sec. average rate 58 per minute; no changes in length of P-R interval; no dropped beats.

pletely disappeared after a period of four weeks, leaving no ill effects.

N. L., age 15, male, white, school boy, was taken ill on February 17, 1925, complaining of sore throat, chills, aching all over body, prostration and cough. An older brother had had the same complaint a day previously.

The temperature by mouth was 102.4, pulse 80 and regular, heart beat at apex 80 and regular. General examination was negative except for a pharyngitis. The heart borders were within the normal limits and the tones were regular. The lungs were clear.

February 18, the next day, he complained of marked weakness and slight dyspnea, even while lying quietly in bed. The temperature was 100 by mouth. Heart beat at apex was 40 and regular. The radial pulse corresponded with the apex beat. The general aching had improved on salicylates and the pharyngitis was much better.

February 19, the temperature was 98.6, heart beat at apex varied between 40 and 44, and was regular. The throat was better and the only complaint was weakness and slight dizziness on attempting to sit up in bed. The heart rate continued the same, and on February 23 an electrocardiogram was taken, which revealed a condition of partial heart block. The P-R interval was 0.12 sec. Average rate 58 per minute, no changes in length of P-R interval, no dropped beats present.

March 5, the heart at apex was 60, and he felt perfectly well except for dyspnea upon any attempt at exertion.

March 12, the heart beat was 72.

At first it was thought that this condition was merely a bradycardia, but when it did not clear up after a few days as is common in bradycardia, an electrocardiogram was indicated to rule out a heart block.

Strychnine and atropine used in physiological dosage had no effect on the heart rate.

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30 North Michigan Avenue.

SPLIT FASCIA INCISION FOR APPENDICITIS

A. N. CLAGETT, M.D.

Formerly Professor and head of Department of Gynecology, Illinois Post Graduate Medical School; Professor of Clinical Gynecology, Medical Department, Loyola University; Attending Gynecologist, West Side Hospital.

CHICAGO

The above name has been given to this operation for appendicitis, the reason for which will appear as the explanation proceeds.

The need for this procedure was suggested by

difficulties encountered in pulling an appendix with a short meso-cecum up through the ordinary rectus incision; in draining walled-off abscesses so that the contents of the abscess might not spill into the larger portion of the peritoneal cavity. Again when using the grid-iron incision it was found troublesome to take out an undescended, retro-cecal or retro-peritoneal appendix; the impossibility of exploring gall bladder, or in the woman, the uterus and appendages. And lastly, a greater danger of post-operative hernia. The technic is as follows:

The distance from the umbilicus to the anterior superior spine is tri-sected. At the union of the outer and middle thirds an incision is made half an inch above this line extending downwards paralleling the rectus muscle. Incision goes through skin and superficial fascia down to the aponeurosis of the external oblique. The external oblique fascia is divided so that the red fibers of the oblique show to the outside of the incision and we now come down to the fascia of the internal oblique. The inner edge of the split external fascia is grasped with three forceps and with a Kocher or handle of the knife is separated from the internal oblique three-quarters of an inch to one inch medial to the outer margin of the rectus muscle.

This is easily done, usually by pressure, but sometimes the blade of the knife is necessary to separate these two layers of fascia. Incision is now made through the sheath of the rectus muscle which is composed at this time of the internal oblique fascia alone. A cuff of at least one-quarter to one-half inch of fascia is left medial to the incision. The outer edge of the internal oblique fascia is now grasped with three forceps and with a Kocher director the rectus muscle fibers with a few branches from the deep epigastric vessels and usually a small nerve from the inter-costals are pushed toward the middle line. Incision is now made through the posterior sheath and peritoneum and the abdomen is open.

It has been observed over and over again that a plumb line dropped from the center of the incision comes directly to the appendix unless through non-descent, adhesions or ptosis it is misplaced. The appendix is removed, peritoneum and transversalis fascia sewed, the displaced rectus muscle is brought back and secured to the original position in its sheath by a few small plain catgut sutures; the internal oblique fascia is now sutured with fine kangaroo tendon or chromic catgut and the external oblique fascia is sutured in like manner, and skin and superficial fascia are closed.

The advantages of this operation are manifold. Firstly, it affords the most direct access to the appendix. Secondly, the incision can be enlarged up or down to get a displaced appendix, explore gall bladder or lower pelvis. An abscess can be drained by pushing the fascia away from the peritoneum outwardly and so approaching the abscess to the outside of the wall of adhesions and lastly, hernia is practically an impossibility because there are four distinct lappings of the different layers of the wound.

This operation was originated by the present author eleven years ago. It has been performed and clinically demonstrated many times and is submitted for consideration with full confidence that it is a practical and helpful procedure.

25 East Washington Street.

DIAGNOSIS AND TREATMENT OF NEUROSYPHILIS WITH REFERENCE TO INOCULATION WITH MALARIA*

JOHN T. NERANCY, M.D.
Jacksonville State Hospital
JACKSONVILLE, ILLINOIS

Nowhere in medicine are there such manifold clinical manifestations as in syphilis. Produced by only one living agent, the treponema pallidum, the disease practically invades every organ of the body and displays a multiplicity of symptoms which is large enough to defy descriptive skill. The layman as well as the medical man has become familiar with the terms primary, secondary, tertiary, and quarternary or metasyphilis, sometimes called para-syphilis, but few realize that these orthodox conceptions have only a superficial and some practical value. Never will we arrive at a thorough understanding of the thousand and one different manifestations of the luetic process if we retain this rigid scheme. There is a gradual going over in the different stages which are more or less interwoven in a biological unit, still more complicated by constitutional factors. A process which chronologically might appear as belonging to the tertiary period, really is of so-called metasyphilitic

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nature; and on the other hand, what appears to the dogmatic observer to be metasyphilis, in fact, is a secondary, vascular involvement. Frequently, for instance, we see paretics who repeatedly develop skin eruptions and other secondary symptoms. This paper is presented with the purpose to touch a number of interesting questions and to prove that we are slowly advancing in an extremely important and difficult field in which early diagnosis is the chief demand and finally to offer a few suggestions. You might find them worth while if you believe that our experience in dealing with neurosyphilis is of any value.

Leoncino in 1497 was the first one to ascribe a nervous disorder, and in this case hemiplegia, to syphilis. Emser about 20 years later blamed syphilis for the psychosis of the general paralysis type. Paracelsus, 10 years later, speaks of the syphilitic virus producing a nervous disorder which we readily can recognize as syphilitic meningitis, but the name "syphilis" originated from Fracastorius in 1521. In the sixteenth century various other nervous disorders were referred to syphilis; to name only a few, the various neuralgias, headaches, deformities of the joint called arthropathies, epileptic seizures, optic atrophy, and a great number of other ailments which we now recognize as symptoms of the whole neurosyphilis group.

In the seventeenth century the first definite description of general paresis was given by Willis. The two following centuries were characterized by great activity in this field, but the scientific basis for the study of syphilis in its various forms was laid by Virchow in 1847, whose interest was concentrated chiefly upon the syphilis of the blood vessels. These classical investigations were enlarged and standardized by Alzheimer, who carried the pathological-anatomical study of neurosyphilis to a comparatively high degree of perfection. The final victory came after a struggle of more than four centuries when Schaudinn in March, 1905, successfully identified the *Treponema pallidum* or spirochaeta pallida as the bacterium which causes syphilis. There are a great number of distinguished names appearing on the list, who have investigated syphilis and especially neurosyphilis in the twentieth century. The enumeration of these names would fall out of the limits of this paper.

Looking back upon the development of the clinical and pathological-anatomical achievements which were obtained during a period of over 400 years and comparing them with the results of the treatment, we must admit that there is quite a discrepancy to be noticed. A remarkable parallelism exists between neurosyphilis and cancer in this respect. Tremendous efforts to master the situation have been made with rather meager rewards. An ever increasing number of antisyphilitic remedies have been added to the oldest remedy, mercury. They are mostly salts of arsenic, bismuth, iodine and other metals, and their modes of application are at least as manifold as their chemical composition; but all these efforts were not encouraging enough to entitle us to the hope that the problem would be solved in the near future. The ideal scientific way of combating and treating the disease is the thorough pathological-anatomical understanding of the tissue changes of the clinical picture accompanying the process and of the causing agents, and the combination of these factors determining the final success must lead to a well defined logical course of treatment. On the other hand, there is an empirical way which is not definitely outlined in advance, not subject to our logical conclusions, but subject rather to chance and hazard. All attempts to control syphilis by pharmaco-chemical means up to the present date must be defined as empirical ones. Ehrlich and Hata obtained their new remedy commonly known as 606, merely by experimenting with a great number of different compounds which they thought might offer a chance for success, and this is the case with all our other remedies, be it mercury or be it tryparsamid, or be it any other drug. These remedies have not been discovered in the same way in which, for instance, an astronomer finds a new star by logical conclusion, or in which a chemist detects a new element of which he knows the existence, merely by logical conclusion. There lies the secret for our failure. We have not yet succeeded in analyzing the syphilitic process in the body so thoroughly that we might predict its possible development for ten or twenty years in advance. There is no definite physical formula to be outlined. The chronicity of syphilis, especially the

connections between the early stages of lues and the late consequences upon the nervous system, are immensely complicated factors which are not yet clear at all. If a great many medical men believe that we have reached a fair understanding of etiological, pathological-anatomical and clinical manifestations of syphilis in general and neurosyphilis in particular, the fact alone that there is an unduly great discrepancy between theory and practice must prove to us that they are deceiving themselves.

If we read up the text-books on neuropsychiatry written ten or fifteen years ago we learn that metalues follows the tertiary period and has to be considered as something like a quaternary stage of syphilis. Furthermore, we are taught that the syphilis of the central nervous system develops from about ten to thirty years after the primary lesion has occurred. In order to explain this peculiar behavior of the spirochaeta they found it convenient to construe a special strain of the bacterium to which they attributed a peculiar affinity to the nervous tissue. No one has ever seen this hypothetical virus. It never has been demonstrated consistently, nor has there ever been any indisputable argument advanced in favor of it. Matrimonial neurosyphilis or development of neurosyphilis in several persons following an infection from the same source and a number of other arguments, too, cannot be considered as an absolute scientific proof. Very soon after the infection the disease becomes generalized through the blood stream, and although the first visible manifestation of the general infection is localized in the skin no one has ever seen the need of construing a special strain with special affinity for the skin. It appears rather natural to assume that in a certain percentage of cases the morbid process must be localized in the brain because the nervous tissue certainly is not immune against the spirochaeta or its alleged toxic products.

The brain, as the material substrate of that indefinable something which we call the mind, is the seat of so many vital functions and behavior reactions. A disturbance of its structure will produce a condition which naturally is more conspicuous and invites us to speculative and auto-suggestive hypotheses; furthermore, it is utterly untrue that metalues is a tertiary or even a quaternary stage of lues. Much light has been thrown upon this problem since our laboratory methods have become more and more sensitive. Metalues belongs to the late secondary period because the early pathological changes in the meninges and the parenchyma take place in the secondary stage as a consequence of syphilitic involvement of the blood vessels. Pathological changes of the cerebro-spinal fluid in the early secondary stage are quite frequent, but even cerebro-spinal fluids which do not yet show measurable serological changes cannot always be considered as free from infectious material. Inoculations of animals with such fluids have disclosed that the spirochaeta has already invaded the central nervous system and where there is a virus there is a danger of its detrimental activities. Fortunately the majority of these cases of early nervous involvement end in restoration to normal conditions.

This problem, which can be touched here only very briefly, is an extremely important one because it leads us to a series of closely related questions. How soon after the primary lesion can it be expected that the spirochaeta actually attacks the central nervous system, and what are the possibilities for a practical and working method to determine the early stage of neurosyphilis? The practitioner and the specialist are equally interested in the solution of this question. Here is another parallelism between the two greatest problems, cancer and syphilis. Prevention and earliest diagnosis are the most vital points. The cancer problem stands and falls with these two points of paramount importance; so does the problem of neurosyphilis, therefore, the general practitioner must constantly bear in mind the vital importance of an early diagnosis and he should do away with the obsolete dogma of the primary, secondary, tertiary and metaluetic stages.

The general practitioner as a rule meets neurosyphilis when it is already well advanced and when there should be no particular difficulty to recognize the condition right away. In the following discussion I shall select only a very small group of symptoms which are of outstanding value for the diagnosis in connection with the laboratory methods. The organ which if properly examined can give us the most important findings is the visual apparatus. We may be misled by listening to the patient's subjective complaints but we never should be misled by the

findings of the optic apparatus because they can be tested in an accurate and impersonal way. The symptomatology of the diseased optical tracts is complicated and immensely variable. There is night blindness, color blindness, dimness of vision, complete amaurosis, either unilateral or bilateral; scotomata of various kinds and degrees; there is temporal, nasal or crossed hemianopsia, optic astereognosia, and soul blindness, falsifications of sight and a number of other disturbances all of which might be produced by syphilis. The light waves are received in the retina. This is the first neuron or the first section of the way which the light stimulus has to travel in order to reach the stage of consciousness. The second neuron follows the optic tract through the crossing in the chiasma and leads to the external geniculate body, the pulvinar of the optic thalamus and the anterior quadrigeminal body where the primary visual centers are situated. From there the third neuron arises. Through the optic radiations the stimulus reaches the cortex of the brain in the calcarine fissure which is located in the occipital lobe. This is the gross anatomy of the incoming pathways. From there new fibers arise connecting the visual center with the higher associations areas and the different nerves which supply the muscles of the eyeball. Naturally if the syphilitic process is located within the way of this intricate and richly communicating system there will be certain functional disturbances; knowing the functions of the different sections of the system we are able to give the proper localization of the morbid process. Beginning with the first neuron, the retina, we have to consider in the first line the syphilitic retinitis which, of course, can be hereditary or acquired. Contractions of the visual field either concentric or irregular, dimness of vision, night blindness; central, partial, and complete scotomata will induce us to make use of the ophthalmoscope by which we can detect opacities around the disk, hyperemia, and serous exudations. If the second neuron is affected the trouble can lie anterior to the chiasma, in the chiasma, and behind the chiasma; the involvement caused by syphilis in this region is called neuritis. The symptoms might be acute or chronic dimness of vision with more or less extensive scotomata. Tabes dorsalis or locomotor ataxia frequently begins insidiously and isolated as such an interstitial neuritis of the optic tract. The process which is transmitted by continuity from a basal meningitis slowly proceeds from the pia inwards through the septa toward the central portions of the tract; an analysis of the visual disturbances is most difficult if the lesion is localized in the region where the connections of the second and third neuron are made, that is, in the corpora quadrigemina, pulvinar, and optic thalamus. The majority of the fibers form their connections in the external geniculate body, building up also rich collateral associations with the oculomotor, the trochlear, the abducens, and the acustic nerves, and with the sensory tracts by means of which the eye movements are associated with the light stimuli and the spinal muscle nuclei. Finally, if the lesion is situated in the end stations of the optic radiations or within the cortex of the occipital lobe, there might be found mind blindness, optic agnosia, or visual hallucinations. These hallucinations sometimes are definitely localized in space and then an approximate determination of the localization of the lesion in the brain cortex can be accomplished.

Another large and important group of eye symptoms are the pupillary disturbances. They are extremely frequent in cerebral spinal syphilis, in tabes dorsalis, and general paresis, and vary greatly in degree from the slightest anomalies of the iris to the absolute stiffness to light commonly known as Argyll-Robertson pupil. Sometimes these disturbances are already fully developed when there is no other sign of neurosyphilis visible. On the other hand, even in well-defined cases of cerebral syphilis there may be no disturbances of the pupillary light reflexes at all. This, for instance, is the case if the lesion is situated posterior to the pulvinar. This explains the fact why in some undoubtedly syphilitic involvements we have advanced pupillary irregularities; in others, we have none. Finally, let me mention that there is a great variety of symptoms of a diseased ocular sensory motor system. Palsies of the oculomotor nerves, of the central peripheral, of complete and partial nature are common; syphilitic thrombosis may cut off the blood supply of the nuclei of the ocular motor nerve; of course, it is impossible within the limits of this paper

to discuss the almost endless symptomatology of the eye in syphilis. I can pick out only very few instances and endeavor to show you some of our clinical material in which you will find a great variety of symptoms which I have not mentioned here. I have a case here of isolated unilateral paresis of the levator palpebrae. Diplopia, strabismus, and various other more or less isolated disturbances are frequent findings which the majority of you undoubtedly have met here and there; some of you may not have had the opportunity to see a case of horizontal nystagmus in juvenile paresis. I have one here for presentation.

According to the anatomical site of the syphilitic-lesion, which, for instance, might be vascular or gummatous or chronic proliferative-palsies of various forms in the different parts of the body occur, hemiplegias, monoplegias, muscle tremors, reflex alterations, and minor or major speech disturbances are extremely frequent. Dizziness, headaches and the so-called neurasthenic complex combined with high blood pressure, must be thought of, possibly being clinical manifestations of syphilis of the cerebral vessels. Persistent rheumatic pains, abdominal cramps, and epileptic seizures call for a thorough examination in the neurological and serological fields. We have seen cases which have been operated on for ulcer of the stomach, for appendicitis, etc., because neurosyphilis had not been eliminated by differential diagnosis. A great deal of the blame for this in general practice falls upon the x-ray man who, being subject to auto-suggestion more than any one else, furnishes the clinician with a diagnosis of his own instead of with a detailed report of his findings. The x-ray examination is a laboratory method; so is the Wassermann test of the blood. A definite diagnosis cannot be based on either of these methods alone. Clinical observation is the backbone of the diagnosis. The physician of today has become accustomed to rely too little on his own diagnostic faculties. If he does not know what to do he looks for help from all kinds of technicians without viewing their findings critically enough. Laboratory and x-ray diagnoses such as pulmonary tuberculosis, chronic appendicitis, ulcer of the stomach are unscientific and might be acceptable only to the chiropractor.

Since the technic of the examination of the blood and spinal fluid has been improved greatly within the last ten years or so the laboratory tests have become an absolute and essential part of the examination. The search for the spirocheata in the spinal fluid is rarely successful. Far more important is the Bordet-Wassermann reaction in the blood serum and the spinal fluid. The more recent the infection the more positive blood Wassermanns. This is the general trend but there is no rigid rule. A negative blood Wassermann does not prove at all that there is no syphilitic involvement of the central nervous system. Some authors emphasize, and we believe that this is right, that negativity of the blood is a quite common tendency in neurosyphilis. The older the process the less frequent a positive blood Wassermann; this is a trend which we believe contains much truth. In a number of cases there is a four plus Kahn reaction if the Wassermann is negative. Wassermann and Kahn precipitation tests should always be done both on the same blood specimen. Most of the large laboratories have accepted this policy. As said above, a negative Wassermann does not prove the absence of syphilis and a positive Wasserman is to be valued merely as one symptom out of so many symptoms of syphilis, out of a whole complex; some of these symptoms might be substituted by another symptom such as neurological findings, for instance. The same must be said about the positivity or negativity of the Wassermann test. Not every absolutely certain case of neurosyphilis must have a positive Wassermann on either blood or spinal fluid. The explanation why sometimes there is a four plus Wassermann on the spinal fluid and at other times there is a completely negative one in the fluid of the same patient, would lead us too far away from the purpose of this paper. As a rule, cases of neurosyphilis show a positive Wassermann in the blood and spinal fluid even if small quantities of fluid are used, the spinal fluid tending to be oftener positive than the blood. At all events, a blood Wassermann and spinal fluid examination are essential in all cases and more than 90% of the doubts can be cleared up by these tests.

The cytological examination of the spinal fluid is almost equally important. Here the outstanding feature is an increased number of

lymphocytes. From none to six cells per cubic millimeter is normal, from seven to ten is considered as borderline, above ten is pathological. Besides lymphocytes one occasionally finds leukocytes, large plasma cells originating in the syphilitic granulations and eosinophile cells. The pleocytosis may go up as high as 2,000 cells per cubic millimeter but the usual number fluctuates between 10 and 200. The increased cell content of the fluid indicates an increased activity of the morbid process which, however, is not necessarily always due to syphilis. It is rather an indicator for the extension of the process and regressive changes in the syphilitic foci. The results of the microscopical examination, therefore, ought to be viewed critically and must be brought in connection with the other findings in the fluid. However, it is generally conceded that lymphocytosis in the fluid is one of the very early findings in neurosyphilis and in over 30% of all syphilitics it has been found to be present during the time when the hard chancre was fully developed and skin and mucosa manifestations were not yet developed, and it was present in these cases at a time when the generalized syphilis had not even produced a positive Wassermann. As soon as the syphilis definitely localizes in the nervous system, more or less constant changes are produced in the cerebro-spinal fluid. Most of these cases present also an increased globulin content, the amount of globulin as a rule running parallel to the pleocytosis. No fixed relationship seems to exist between Wassermann on the one side and pleocytosis and globulin content on the other side. To make it clear, taken alone these four standard tests, namely, blood Wassermann, fluid Wassermann, cell count, and globulin permit no positive conclusion in regards to details of the syphilitic involvement, but if looked upon intelligently as an entity, valuable conclusions as to localization, prognosis, and treatment can be drawn. There are some additional tests such as the Noguchi luetin skin-test with killed spirochaeta cultures; the provocative Wassermann, which is of rather doubtful value; the Sachs-Georgi reaction; the Meinecke reaction; the Mastix reaction; and the Lange colloidal gold reaction. The latter one is the most dependable of these additional tests. It is a color reaction which is chiefly used for the purpose of differentiating between special forms of neurosyphilis over which we will glance shortly in the following paragraph.

The syphilis of the cranial bones frequently affects the nervous system and might impress one as neurosyphilis, but most frequently it is mistaken for epilepsy or other diseases which produce intracranial pressure symptoms. They are mostly gummata, which if of considerable size, cause headache, nausea, vomiting, restlessness, epileptiform convulsions, choked disk, motor, sensory, visual and other focal symptoms.

The meningitis of the base is the most frequent form of nervous syphilis met with. The symptoms are as variable and multiform as the localization of the process which is different in almost every instance; most of the cranial nerves are exposed on the base of the cerebrum and therefore naturally apt to be attacked. The first signs of their involvement may appear as early as three months and as late as thirty years after the primary lesion. Carried by the blood stream the bacterium at first enters the cranial cavity through the complicated and dense network of the arteries underneath the pons and the pedunculi of the cerebrum. The considerable narrowing of the lumen occurring more or less briskly produces a rather sudden retardation of the blood stream in the capillaries which is favorable to the settlement of the spirochæta. In the great majority the pathological tissue changes arise in this part of the meninges near the pons. Unfortunately, a number of cranial nerves, and in the first line the optic tract, must be attacked and later on the morbid process extends along the meninges around the nerves, penetrating in the sulci and in the brain substance proper. Early complaints consist of headache, especially intense as nocturnal exacerbations, as visual disturbances and mental disbalancement. Sooner or later more definite signs appear, mostly in form of isolated or complex nerve palsies. One-third of all the cases have trouble with their eyesight and develop a number of findings which I mentioned previously. Practically every one of the twelve cranial nerves might be implicated in some way causing simple or complex symptoms, according to its functions. Mentally such patients present striking features; the intensity of the mental manifestations is changing in short in-

tervals; emotional instability is displayed continuously. There is a wide range of mood from extreme apathy to the most violent outbreaks. A period of unconsciousness and deep coma is suddenly followed by an acute exhilaration possibly with a series of epileptiform convulsions. Delusions of persecutory nature, hallucinations of all sorts, homicidal and suicidal attacks based on paranoid formations cannot deceive the diagnostician if he bears in mind that syphilis produces psychotic symptoms which temporarily at least often resemble closely the manic-depressive, the praecox, the alcoholic, the epileptic, and other psychoses.

The meningitis of the convexity of the brain occurs either more localized or combined with the meningitis of the base. If it is a clear convexity affair there will be less involvement of the cranial nerves unless it is through intracranial pressure. The headache which comes on in paroxysms, is particularly intense and there are more focalized manifestations. Epileptiform seizures are very commonly met with as well as motor speech troubles, mono- and hemiplegic attacks, and a number of other cortical symptoms. In fact, the picture becomes so complicated and the devastations of the different brain areas are so extensive and diffuse, and the destruction progresses so deeply into the sulci that it is practically impossible to draw a distinct line between the various forms of meningitis and general paresis, which latter represents the combined meningo-encephalomyelitis form because the medulla is very frequently invaded in the same way.

General paresis is the classical type of neurosyphilis both as to neurological and mental symptoms; it is the syphilitic inflammation and disintegration of the parenchyma of the brain and therefore in the first line a central type of brain syphilis. In the neurological field there are almost as many different findings as there are patients. In the mental field you might gain a rough orientation in the classification introduced by Kraepelin. Therefore, we divide the cases in the simple dementing, the depressed, the expansive, the agitated, the irregular, and the juvenile form. Tabes dorsalis might be mentioned as sometimes entering into combination with the true central encephalitic forms. Symptoms and course of general paresis are too well known to require any discussion in this place.

It was not very long ago that neurosyphilitics with mental trouble were treated by imprisonment; behind the iron bars they were looked at like wild animals and they were lucky if they died as soon as possible. Some ten years ago in this hospital the bars were removed and occupational treatment was gradually introduced. But this did not mean that a paretic was really cared for scientifically; it took some more years to give them some kind of an antisyphilitic treatment, although still in an inadequate and non-systematic way. The treatment of paresis was a thankless job; it was generally presumed that nothing worth while could be achieved; so why spend effort, why spend money if they will die, anyway? If we want to be fair to the patient who is entrusted to our care and efficiency we must deny this spirit of discouragement. Besides it is an erroneous conception that the treatment of neurosyphilis is a thankless job, at least, not less thankless than the treatment of cancer. Some forms of neurosyphilis, if treated persistently, yield very good results.

As we believe it to be beyond reasonable doubt that all forms of neurosyphilis are due to the presence of the spirochæta or its toxic products, our chief attack must be directed against this enemy. From an ideal remedy we ought to demand that it kills the spirochæta in nontoxic doses, that it neutralizes all its possible toxic products, and that it promotes restoration of diseased nervous tissue. We do not possess such an ideal remedy—the results cannot be ideal, but we have means by which to fulfill a part of the requirements. Mercury, arsenic, iodine, and bismuth are the drugs chiefly used in therapy of syphilis; some other chemicals have been tried out but have not yet proven valuable enough to be classified among the standard drugs. Incomplete application of drugs does more harm than good, therefore, it is of utmost importance that the treatment is carried on energetically for a considerable length of time. In a great many instances, however, we seem to be unable to reach our ultimate goal—the thorough sterilization of the body. We do not know positively how deep these drugs penetrate the substance of the brain, some parts of which probably are never reached by these chemicals in sufficient concen-

tration to produce any measurable effect. The spirachæta grows hidden in the connective and vascular tissue, as well as in the depth of the nerve tissue where it has been demonstrated. How far the diffusion and osmosis of the various chemical solutions go without being unduly diluted or even alterated in their molecular structure is not sufficiently known. It was just the realization of this thought which introduced the intraspinal and intraventricular application of the arsenicals. Some believe that the spinal fluid exerts a diluting influence upon the medicaments which makes them less efficient. They, therefore, drain the fluid before they inject the remedy. Others do not drain before injection. However, the results of these special methods have not justified their hopes. As long as the foci of the morbid process are easily accessible, on or near the surface or along the larger vessels, there is a greater chance for the chemicals to act in a sufficient concentration. From the anatomical standpoint it appears plausible enough why some forms of neurosyphilis respond well, others not at all to treatment.

Mercury in its various forms is our oldest remedy, it is used alone or in combination with other drugs and has to be considered as efficient in earlier periods of the disease. Investigations have shown that it does not prevent the development of pathological changes in the spinal fluid. Yet it has to be considered as valuable, especially in vascular and gummatous involvements. Insoluble and soluble salts of mercury are widely used. We prefer the suspension of metallic mercury in oil, which is injected in the buttocks once a week. One of the most popular arsenicals in the presalvarsan period was the cacodylate, which was used quite successfully in some cases until damages to the optic nerve discredited the drug. Then began the salvarsan era. Hot battles have been fought over this remedy. Summarizing its value, we might say that it is promptly acting in earlier stages of syphilis—often promptly enough to induce the patient to discontinue the treatment to his own disadvantage. In neurosyphilis its value is limited—results can be expected only with doses that are higher than usually administered. The desire to render the arsphenamines less toxic in higher doses has led to a number of derivatives such as silverarsphenamine, neoarsphenamine, sulpharsphenamine, and recently tryparsamide. We have been using these drugs on over 130 neurosyphilitics with satisfactory results. The chief factor is that sufficient doses must be given over a protracted period. Our results make us believe that here the often discredited "gunshot method" has its advantages, inasmuch as we do not possess any exact criterion for our methods, they are not based on objective scientific grounds. We have tried to cover as much ground as possible with the various remedies. A patient who is not benefited by one might be benefited by another drug. Of course, the method must be applied intelligently and then it will permit a good deal of individual variations which we use extensively. We believe that only such a definite plan combined with empirical modifications can lead to success in an institution which has to care for a large group of such cases. After several months of intensive treatment we have found out a great deal about the patient's response to the various drugs on the market. Although we begin with a rather rigid scheme, our method is at the same time very flexible, especially if combined with repeated blood and spinal fluid tests. We started with a group of 110 neurosyphilitics, treated all alike, but very soon the group was split up in five different subdivisions and the shifting is still going on. Tryparsamide has been used extensively—more than two thousand intravenous injections have been given within 14 months. We are proud to say that in no instance has there been observed any of the damages which have been reported from other places. We give the maximum dose of 3 grams once a week—10 to 12 injections representing one course. In some courses it is combined with mercury, in others it is given alone. To say it briefly, it is very valuable in neurosyphilis, but sulpharsphenamine, neoarsphenamine and tryparsamide used in combination are apt to give the most satisfactory results. I have given a summary of our results in the March issue of the *Welfare Magazine* to which I might refer you because the discussion of these results within the limits of this paper would go too far. There are a great number of drugs of minor importance on the market, but none of them can rival successfully the above mentioned standard remedies. A few years ago Fischer of Germany introduced the sodium salt of nucleinic acid and reports quite favorably on it. Based on these results we recently have decided to use the sil-

ver combination of this salt. Two cases have been treated with it for a short time only—a marked increase of leukocytes in the blood following the subcutaneous injections was the outstanding feature. To our knowledge this chemical compound has never yet been used in the therapy of neurosyphilis. As the leukocytosis most probably has a beneficial influence and as the silver is a powerful germicide we shall try it out, especially in connection with the malaria treatment. The danger of the treatment with drugs does not so much consist of damages to the nervous structures as of inadequate treatment. If there is anything like immunization against the spirochaeta, insufficient treatment probably will interfere with it, will only weaken the bacterium and so diminish the sensitiveness of the body in the earlier periods following the infection. Thus many believe it will promote a late involvement of the central nervous system.

Based on the fact that acute intercurrent diseases which produce an elevation of temperature —such as pneumonia, typhoid, erysipelas, abscesses and others, are liable to produce striking remissions in paretics; Wagner V. Jauregg in Vienna conceived the idea to use this empirical knowledge systematically for therapeutic purposes. Typhoid vaccine, proteins, tuberculin and other fever producing agents were tried until in 1917 the first experiment with tertian malaria plasmodium was made. One or two c.c. of blood from a nonsyphilitic donor suffering with a suitable type of malaria, were injected intramuscularly. After an incubation period of about one to two weeks or more, the patients developed their first chill. From eight to sixteen chills were allowed and then the infection was checked by quinine. The method is simple and no unreasonable danger is connected with it providing that only the benign tertian type is used. This danger is eliminated by careful study of the donor's strain. Later on most of the European investigators transmitted the blood from paretic to paretic. Our method is similar. After having obtained the benign plasmodium from a nonsyphilitic donor, 2 c.c. of blood were transmitted intravenously from paretic to paretic and the plasmodium has so been kept alive since August, 1925. About 10% to 15% of the inoculated patients did not take but by repeated inoculation this percentage could be reduced to about 8%. The virulence of this same strain which we have been using all the time, varies greatly at different periods. Furthermore, the clinical manifestations have been different in almost every instance; quite a number of the patients stopped their chills spontaneously after two or three attacks. It is interesting to observe the effect of numerous direct passages of the plasmodium through man. The sexual cycle is abolished and malaria is not any more transmissible through the bite of the mosquito. Therefore, there is no danger that the institutions may become a menace to healthy individuals.

Wagner V. Jauregg's investigations opened a new field which was invaded by a number of large clinics. Considerable enthusiasm favored this movement and enriched the literature with some sixty members, and their number is constantly increasing. Reviewing this literature one gains the impression that the malaria treatment in central type of cerebral syphilis compares very favorably with all other methods even if one takes into consideration that there are unduly enthusiastic reports and that sufficient time has not yet elapsed to permit an exhaustive and critical survey. In this hospital we are inclined to be critical and conservative in regard to the final outcome. Therefore, we may not be able to compete with the statistics of other places where they have discharged a number of their patients, sent them back to their old environment, let them go to work and adjust on the outside. We could have at least as many if not more such show cases, but we have decided to follow up our patients for a number of years; only in this way will we gain an objective impression which will be of value for the time to come. Only two patients were discharged being in complete remission. They are out now six months and get along fine. Statistics are so often misleading and in this case they are particularly doubtful. We have inoculated 50 patients and 50 more are awaiting their chills, or have gone through recently. Briefly stated we are very satisfied with the results. It might be mentioned that the maximum of improvement does not follow immediately the termination of the chills—it often takes three or four more months to bring out the full effect. We allow the patient to have up the full effect. We allow the patient to have up to 25 chills if his general physical condition offers no contraindication. Some cases have been re-inoculated and are now going through

their second fever course. The best remissions were obtained in the expansive and agitated types combined with typical hallucinatory and delusional experiences, the most meager effect was noticed in the dementing and depressed forms; even far going dilapidated cases have improved to such a degree that they give us new hope where there has been almost nothing expected any more. All of our cases but two were previously treated with drugs. Here is another parallelism to the cancer problem. If a cancer is operable the patient should not be exposed to the hazard of treating him in a radiological laboratory—a combination of knife and radiation will give him the most chance to save his life. The neurosyphilitic will go safer if he is not exposed to the hazard of treating him with malaria alone, of which we do not approximately know its mode of action. Our standpoint might be different if the malaria treatment would result more often in a decidedly favorable change in the spinal fluid. But this is not the rule and the clinical improvement and findings in the spinal fluid or blood must not necessarily go hand in hand. Out of 20 spinal fluids taken after the combined drug-malaria treatment 14 showed only minor changes, 6 surprised us by a change of the 4 plus Wassermann to a negative one and a reduction of globulin and cell count to nearly normal. No scientifically founded comments can be offered at this time in regard to the mode of action of the plasmodium. Elevations of temperature cannot be the only responsible factor because some patients show marked improvement even if the rise of temperature is only very slight; in these cases the clinical picture is rather one of hemolysis with yellowish discoloration of the skin, loss of weight, and general physical decline which is checked promptly by quinine. On the other hand, we know that the spirochaeta is very sensitive to even slight increase of temperature, which exerts a damaging influence upon its vital activities. The hypothesis that the elevation of temperature is the main factor is supported by the observation that other fever producing diseases have a somewhat similar effect in paretics. Other explanations have been offered such as change in the tonus of the vegetative vasomotor system leading to accumulation of leukocytes in the brain and lowering of leukocyte count in the peripheral blood stream, formation of protective substances in the blood and increased transsudation; all explanations, however, are unsatisfactory yet.

Summarizing the results obtained with the malaria inoculation we might say that there is no doubt that it is a step forward. Cases of neurosyphilis which have been refractory to any other treatment, often are benefited to a surprising degree. Drugs and malaria are used in the safest way by combining them. We should endeavor to clear up the mode of action of the plasmodium because this might open new and scientifically founded ways in the treatment of neurosyphilis.

Those who are inclined to take a pessimistic standpoint of view largely dwell on two arguments. They say that neurosyphilis generally shows a trend to spontaneous remissions. This is true at least in incipient cases. But for one who has observed paresis in a large hospital over a considerable length of time keeping in close touch with the kaleidoscopic changes it is clear beyond doubt that remissions in not treated cases are really much rarer than usually presumed. The majority of the treated patients are more easily managed, their life is materially prolonged and their physical and mental condition is more comfortable.

The chief argument against the treatment with malaria is that there is neurosyphilis in parts of the country where malaria is endemic. This is by no means a convincing argument. It does not even hit the point. In the first place, we do not maintain that malaria produces immunity against neurosyphilis nor that it is a specifically acting treatment. Moreover, they have not introduced indisputable evidence that paresis is as frequent in malaria countries as in malaria free countries. They merely guess at that, just as I do if I quote my experience from over three years of medical work in the Near East, where malaria is almost pandemic. There I had gained the impression that paresis in these countries is less frequent than in the western countries, in spite of the prevalence of syphilis. Hitherto there has been no reliable statistical material available which might clear up the doubts in this controversy.

Presentation of 35 cases of neurosyphilis.

THE MANAGEMENT OF URINARY CALCULI*

LOUIS D. SMITH, B. S., M. D.
CHICAGO

In order to properly treat lithiasis of the urinary tract we should have a general understanding of the nature and possible origin of these stones and factors leading to the request for diagnosis and treatment.

The stone or stones may be located in one or both kidneys, either or both ureters, kidneys and ureters simultaneously or one kidney and opposite ureter or kidney and ureter of the same side, in the bladder alone or in various combinations with stone of the upper urinary tract. A ureteral stone always has its origin in kidney or pelvis of the kidney and represents a descent of the calculus with or without symptoms. About 12% of renal stones in the adult are bilateral, whereas in children and infants they are bilateral in about 6% of cases; 66% of bilateral stones are multiple. The ratio of male to female patients is 5 to 1. Of impacted stones 76% occur in the lower ureter, 19% in the upper, and 5% in the middle. The average distance from the bladder of the impaction occurs at about 8 cm.

A capitulation of the studies of stone formation yields the following most likely ideas. In 1918 Cabot concluded that under as yet unknown conditions, supersaturated urine is secreted in which crystallization occurs and in which under certain conditions of retention is held so, growing to the size of a true concretion. Infection is a factor only in so far as it gives rise to conditions creating retention and in that it affects the chemical composition of the stone. In 1920 C. H. Mayo considered stone formation was due to infection. In 1922 Rosenow and Meisser reported the production of calculi in 5 out of 6 healthy dogs by sealing a culture of streptococci repeatedly isolated from the urine of a case of nephrolithiasis into the teeth of dogs.

The most fascinating and yet plausible theory of the cause of urinary stone formation is based on the fact that the urine, a supersaturated solution, keeps its solids in solution by means of the protective influence of the urinary colloids, either by a process of absorption, due to the enormous surface tension of the colloids or by a reduction of the surface tension between the urine and the mucus membrane of the urinary tract. The tendency of colloids, in themselves unstable, is to fall out of suspension, and with the removal of these colloids precipitation of the supersaturated salts takes place.

Sedimentation in urine does not in itself cause stone. An organic binder is necessary and this consists of irreversible colloids that do not redissolve after being thrown out of suspension. Pure uric acid and urate stones probably form without colloid admixture by the coalescence of their intermediate droplet form, and by presenting a large surface they absorb colloids, forming the mixed stone. Anything then disturbing the equilibrium of the colloids, as any pathology or foreign substance in the supersaturated urine may serve as the starting point of stone formation.

The symptoms of urinary lithiasis vary from the apparently symptomless or so-called "silent" stone to the typical and familiar renal colic. Intermediate types of symptoms are ordinary pains or aches in the kidney regions or in the sides. Perhaps if we inquire closely even in the silent stone cases we may elicit the history of backache or other vague aches or pains. Other signs of symptoms are frequency of urination, dysuria, hematuria, gross or microscopic, pyuria, gross or microscopic, palpable enlargement of the kidney.

The variation in the symptoms and intensity of symptoms presents an interesting phenomenon. Pains are ascribable to the spasm in the ureter and distention above the level of the stone as a result of stasis, which may also be due to ureteral stricture. According to Hunner, the presence of a calculus in the upper tract is presumptive evidence of a coexistent ureteral stricture. The stricture is bilateral and according to him could account for the relatively high incidence of bilateral stone. In his way he has demonstrated the presence of stricture in all his cases of upper tract stone.

The recognition of urinary lithiasis is as a rule not difficult. The symptoms usually direct attention to the urinary tract and this calls for cystoscopic and x-ray examinations. A discussion of the differential diagnosis between urinary lithiasis and abnormal conditions causing a

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similar symptom complex will not be made except to state briefly that urinary lithiasis can be easily ruled out.

Cystoscopically, bladder stones can be visualized even if the x-ray casts no shadow, except in stones of bladder diverticula. A stone in the intramural portion of the ureter may often also be seen. Ureteral stones may be detected by the obstruction to the passage of the ureteral catheter or the scratching of the wax bulb catheter. By far the most valuable diagnostic procedure is the combination of the ureteral catheter and x-ray, making urography possible. A urolith must be differentiated from the phlebolith and calcified retroperitoneal and mesenteric lymph glands. This is done by localizing the shadow with the catheter in the ureter and the picture taken at various angles or in suspected pelvic stone by injecting a shadowgraph fluid to determine whether or not the stone shadow is included by the shadowgraph medium. The value of the shadowgraph medium is demonstrated in cases of stones permeable to the x-ray. If the stone is less dense than the medium, a filling defect may be noted in the location of the stone. If the stone is denser than the medium, the stone then casts a denser shadow than the enveloping medium.

Why all stones do not cast shadows with x-ray is interesting, but is explicable on the basis of its opacity, which varies with the atomic weight of the elements common to the stones. Now if the center and outer layers of the stone are rich in the elements with low atomic weight, no shadow may appear. The opacity is also governed by the arrangement of its constituents, thickness and structure. The following types cast the densest shadows in order of their mention, calcium phosphate, calcium oxalate, calcium and magnesium phosphate, ammonium magnesium phosphate, calcium and magnesium urate and uric acid.

Which type of stone is the most common varies with the report of different investigators. Uric acid and urates enter into probably 80% of the stones. Any stone remaining for any length of time may receive depositions of phosphates, which are usually found in most stones. The center of the stone most truly represents the type.

The treatment of urinary lithiasis depends first on the location of the stone or stones, the pathology incident to or coincident with the lithiasis and symptoms, the comparative size of the calculus (if ureteral) and that of the ureter, the shape of the stone, the history of previous passage of stones and general conditions of the patient.

We may divide the subject of treatment into three classes, the conservative or manipulative, the operative and the post-operative and post-manipulative. The first method consists of the crushing of stones if in the bladder followed by their evacuation either spontaneously or by an evacuator. As for ureteral stones the object is first to dilate the ureter below the level of the stone by various bougies, dilators or catheters, cutting the ureteral meatus if necessary, and to dislodge a possible impacted stone by the same means, following which procedures, the stone may be passed into the bladder when it may be voided or removed. Excellent dilatation may be obtained by this means, especially if the catheter is left in the ureter for one or two days. These procedures are usually safe and may be repeated often if there are no contraindications to delay.

The great advantage of manipulative treatment lies in the establishment of drainage, a procedure that often improves the function of badly damaged kidneys, relieves symptoms to such an extent that an otherwise emergency operation is obviated by the opportunity to thus condition a patient before operation, and tends to minimize the chances for recurrences. It enables us to determine which side is best first approached in case of bilateral stone by observing the restoration of function of the kidneys. Manipulation is successful in about 75% of cases.

Operative interference consists of cystotomy for bladder stone, ureterotomy for ureteral stone, pyelotomy, pyelo-nephrotomy, nephrotomy and nephrectomy for pelvic and renal stones.

In a general way the indications for operation for renal and ureteral calculi may be summarized as follows: 1. the size and position of the stone with reference to its interference with the flow of urine away from the kidney, 2. the presence of infection, 3. the function of the kidney, 4. pain, 5. the condition of the other kidney, 6. failure or intolerance to manipulation, 7. suppression of urine.

In bilateral cases the following as recom-

mended by Cummings, may serve as a guide as to which side to attack first.

1. With equal function loss and size of stone with assumed destruction of equal portions of kidney tissue, do not operate either side in absence of symptoms, but with active infection attempt drainage.

2. With unequal function loss and equal kidney damage and stone, attack the kidney having the lower function, thereby preventing additional damage and with a view to having the poorer organ improved for a reserve when the better side is operated on.

3. With unequal stone and function loss, unequal kidney damage, remove the more devastating stone first, disregarding the inequality of demonstrable function, unless the kidney having the smaller calculus is absolutely functionless, a fact which makes this type merge into a class with,

4. Unequal stone mass and disproportionate function changes, fix up the more damaged kidney first, even though the opposite side has more symptoms.

In the presence of multiple branched or large stones, hydronephrosis or extensive areas of renal infection, the indications for nephrectomy are a functionless or nearly functionless kidney, a badly infected kidney, a marked hydronephrotic kidney, a kidney previously operated on and, of course, malignancy associated with stone.

The indications for conservative surgery are 1, in the presence of single or multiple stones easily removed without great damage to the kidney; 2, in the presence of multiple or large branched stones, marked infection or some other serious complication in the other kidney; 3, when there is a history of repeated stone formation in both kidneys. Conservative surgery is to be preferred when a good functional result can thus be obtained. In the young, conservation should prevail when possible, whereas in the older individual, especially if the symptoms are of long duration and thus probably place the patient past a possible stone-forming period, nephrectomy would be wiser. Again, one must consider that complications that may make nephrectomy necessary, also make it more dangerous.

If in doubt as to the type of operation it is more important to consider the probable functional end results than the possibility of recurrence.

In nephrectomy with ureteral stone on the same side, the ureteral stone must likewise be removed or symptoms may persist. At the Mayo Clinic nephrectomy was done in 37 per cent of 819 cases.

Pyelolithotomy constitutes the procedure in about 40 per cent of cases. Nephrolithotomy will be necessary in about 15 per cent of cases, and especially in those cases where fragments have been left. As to choice between pyelonephrotomy and nephrotomy, the latter is the method of choice if a stone is situated at the end of a calyx and is not accessible through the pelvis, but for best drainage and easier removal with less chance to recur, the former is the preferred. In the presence of cortical degeneration adjacent to the stone, nephrotomy is indicated.

There is nothing of greater importance than the post-operative treatment. We must take cognizance of the fact that infection usually accompanies stone, that stricture is a concomitant pathological phenomenon. We must then, after removal, dilate the stricture, maintain good drainage and resort at times to pelvic lavage. Many patients have often complained of a persistence of symptoms, because of failure to carry out these post-operative manipulations.

An analysis of urinary lithiasis leads to certain definite conclusions. Calculi cause greater renal destruction than any other surgical lesion. Why so much damage occurs is due to the fact that symptoms are often present from one to twenty years before advice is sought or treatment instituted, and this delay is partly due to the fact that many physicians expect to find typical colic or hematuria before advising urologic examinations.

We can expect a net recurrence in about 10 per cent of cases, and by net we mean exclusion of fragmentary calculi remaining after operation or manipulation. Recurrence is greater following the removal of single than multiple stone, and greater after removal of branched stone, probably due to the ease in fragmentation. Large stones are less apt to be followed by recurrence. Infection plays a minor role in recurrence.

Recurrence in the remaining kidney after nephrectomy averages but 3 per cent, and it may be because the duration of the trouble when nephrectomy is indicated was of such long stand-

ing that the patient may be past the stone forming period. In pyelolithotomy recurrence takes place in about 12 per cent of cases, but this operation is more apt to be done when the case is still a stone-former. Nephrolithotomy carries a high recurrence incidence also, probably due to inadequate drainage, cicatricial changes at the site of the stone and because this type of operation is more often done where fragments had been left in previous operations.

Finally, in the combined nephrolithotomy and pyelolithotomy recurrence is least frequent because here drainage is most easily promoted.

25 E. Washington Street.
9113 Commercial Ave.

CHRONIC URETHRITIS: ISOLATION OF THE GONOCOCCUS AND PLEOMORPHISM OF SECONDARY INVADERS SIMULATING THE GONOCOCCUS

CLARENCE C. SAELHOF, M.D.
John McCormick Institute for Infectious Diseases
CHICAGO

Chronic urethritis is the ban of the urologist. Acute gonorrhea disappears under adequate treatment and consecutive negative smears for the gonococcus are obtained under prolonged stimulative treatment. In a number of instances, the patient will return after a varying period of time with the clinical symptoms of a chronic urethritis. Smear preparations stained by the method of Gram will always show the predominance of a secondary invading organism, usually the staphylococcus. However, in the light of recent development for the isolation and cultivation of the gonococcus, it was assumed that in these instances of chronic urethritis, the gonococcus might be obtained if suitable technique was employed.

Grimberg[1] states that by his method, he was able to obtain the gonococcus in 85 to 90 per cent. of cases of chronic urethritis. He is of the opinion that besides lodging in the prostate gland, the gonococcus invades the seminal vesicles and particularly the liquor seminalis. He states that other organisms may gain prominence, but chronic urethritis is due to the gonococcus.

A modification of Grimberg's technique was used. A series of 14 cases was carefully studied, these patients previously having had treatment for gonorrhea and discharged upon consecutive negative smears. The method in detail was as follows: liquor seminalis was obtained by gentle stripping of the seminal vesicles and the material obtained (which necessarily contained a small portion of prostatic secretion) was placed in sterile test tubes. These tubes were placed in the incubator for one-half to one hour at 37 C., which tends to liquify the liquor seminalis. Suitable specimens of liquified seminal fluid were then seeded into tubes of ascitic agar.* Incubation was maintained at 37 C. for 24-36 hours and the portion of culture just beneath the surface examined. The cultural findings are listed in Table 1. As observed, gonococci were isolated in only 5 of 14 cases of chronic urethritis, and then only after repeated trial. The gonococci isolated fulfilled all standard morphological and cultural requirements. The secondary invading organisms are listed; they were, in many instances, peculiar in their cultural reaction. Pleomorphism was observed, with reversion to basic strain on cultural transplant. A large number of the staphylococcus colonies showed wide zones of hemolysis upon blood agar: this peculiarity was transitory. Their cultural characteristics were studied in some detail, and the results obtained agreed with those obtained by Julianelle.[2]

The phase of mixed complicity with the gonococcus is much undervalued. In many instances, from the very beginning, the pure gonorrheal type of disease quickly becomes a mixed infection. From their inception, discharges are observed which vary noticeably in color. Some are white, some yellow, and some occasionally greenish. That different strains of the gonococcus should possess this chromogenic variation is questionable and still unproven. Culture of different colored discharges shows other organisms present. Logically, one may suspect that from earliest urethral activity the gonococcus allies itself with some organism which possesses chromogenic peculiarities when growing on a natural medium.

In Table 2 is given the average day of secondary invasion from alleged initial discharge in 80 cases, obtained by smear and culture preparation. These cases were obtained routinely as

1. Grimberg: Jour. de med. de Par., 1925, XLIV, p. 315.

*This medium consists of dibasic acid sodium phosphate agar: in the melted state diluted with sufficient ascitic fluid to make agar concentration about .25 per cent, a semi-gel.

2. Julianelle: Jour. Inf. Dis., 1922, 31, p. 256.

applying for treatment and are tabulated as number of cases showing approximate date of secondary invasion; the largest number showed secondary invasion 6 days after alleged initial discharge, the next group after 5 days.

Discussion: Whether or not the gonococcus is eliminated by adequate treatment, or falls a victim to the overpowering onslaughts of innumerable secondary invaders, is undetermined. However, literature fails to reveal any phenomenon simulating d'Herelle's bacteriophage in lysis or dissolution of the gonococcus. There are many instances of urethral inflammation which begin as a gonorrhea, and, after treatment, do not show the gonococcus, but do show diplococci morphologically resembling the gonococcus. One is then confronted with a secondary infection which becomes a chronic urethritis kept alive by organisms whose morphotic deviation from basic type is a source of diagnostic uncertainty. Doubtless, this condition has been greatly responsible for much of the hesitancy in prognosing the future of the gonorrheic.

The two common offenders in pyogenic infections of the urethra and adnexa are the gonococcus and staphylococcus. There are other strains of organisms causative of or associated with urethral infection, but they are not consistent malefactors of the urogenital tract. On the basis of frequency of occurrence and similarity in characteristics, other cocci are not so apt to be confused with the gonococcus as the staphylococcus. While the micrococcus catarrhalis is a true Gram negative diplococcus and may be intracellular, it thrives luxuriantly upon any ordinary culture medium and hence affords easy differentiation from the gonococcus. Staphylococci may be found everywhere; they readily become accessories to urogenital infection. From the diagnostic and prognostic standpoint, they would not be so troublesome to the urologist if they were consistently true cocci. They may be inconstant: oval in shape or grouped together in pairs and markedly diplococcic in outline. They are usually Gram positive but, in the presence of marked albumin or other adverse conditions to the Gram stain, be relatively Gram negative. In these inconstant respects, they simulate the gonococcus and, should the basic aniline stains be the sole criterion of diagnosis, they will inevitably be mistaken for them.

Pleomorphism means the property of having many forms; that an individual variety of bacteria may appear to possess more than one shape under different conditions of growth. For example, the staphylococcus may be both round and diploid and retain its basic classification as a coccus. Recent studies in the hydrogen ion concentration relative to bacterial life (I. S. Falk) show that organisms are easily influenced by variation of the conditions surrounding their artificial growth and that such change does not materially alter pathogenicity.

Changes in form of individual strains are not always the result of growth environment. Hiss and Zinnser state that certain organisms, while thriving under apparently ideal and normal cultural conditions, will present atypical forms, However, these variants do not depart from parent type; they may show unnatural clubbing, beading or staining properties, but cannot be propagated into a distinct type which differs from the parent. Naegeli applied the term involution. Under certain conditions, there appeared in cultures, particularly bacilli, irregular and distorted organisms. His opinion was that they were produced by imperfect growth, due to inhibitory influences of some type.

These forms are readily demonstrated in human urethral discharges. Whether such changes are due to some natural or artificial phenomenon is immaterial from the standpoint of diagnosis, since culture will always establish the basic identity of the strain. The vital point to bear in mind is that these organisms are not constant in form and cannot change much without encroaching on the characteristics of organisms of closely allied strains; they may, by cursory examination with basic aniline stains, be easily confused with gonococci. It is really striking to observe how closely they may simulate the gonococcus, not only in shape but in staining reaction and apparent intracellular position; however, when transferred to an artificial medium having ideal cultural conditions, will reassume the morphological characteristics of the basic strain.

Summary: Cultures were made on 14 cases of chronic urethritis, which had previously been

treated for acute gonorrhea, determined by the presence of Gram negative intracellular diplococci. In only 5 instances, or 35.5 per cent., were positive cultures of gonococcus obtained from these cases of chronic urethritis and then only upon repeated trial, in most instances.

In a routine series of 80 cases of gonorrhea, smear and cultural preparations show that secondary invasion of the urethral tract is most likely to occur about 6 days following alleged initial discharge. The most common offender is the staphylococcus group, particularly albus.

Pleomorphism or involution of the secondary invaders is observed simulating the gonococcus. All Gram negative or relatively Gram negative diplococci should be considered as gonococci until proven otherwise by cultural methods: reversion of pleomorphic organisms to basic strain is easily obtained on ideal artificial culture medium.

4456-58 W. Madison Street.

TABLE 1.

Case*	Organisms	Staphylococcus			Bacillus	
	Gonococcus	albus	aureus	citreus	coli	diphtheroid
J. C.	Positive on 1st trial ...	+	0	+	0	0
J. K.	Negative on 3 trials	+	0	0	0	0
L. V.	Negative on 4 trials	+	0	0	0	0
N. O. C.	Negative on 3 trials ...	+	0	0	0	0
A. J.	Positive on 2nd trial ..	+	+	0	0	0
J. S.	Positive on 1st trial ...	+	0	0	0	0
M. J.	Negative on 6 trials	0	0	0	+	0
C. B. L.	Negative on 3 trials	+	0	0	0	+
J. L.	Negative on 3 trials	0	0	+	0	+
N. P.	Negative on 3 trials	+	0	0	0	0
R. R.	Positive on 1st trial	+	0	0	0	0
J. W.	Positive on 3rd trial ...	+	+	0	0	0
C. H.	Negative on 3 trials	+	0	0	0	0
C. K. P.	Negative on 4 trials	+	0	0	0	0

*Gram negative intracellular diplococci were found on previous infection.

TABLE 2†

Day from initial discharge	Total number of cases	Number of cases showing Gonococcus*	Staphylococcus albus	Staphylococcus aureus	Staphylococcus citreus	Bacillus coli	Bacillus pyocyaneous
1	1	1	1	0	0	0	0
2	9	9	8	1	0	0	0
3	7	7	7	1	0	0	0
4	6	6	6	1	0	0	0
5	18	18	16	0	1	0	1
6	21	21	21	0	0	0	0
7	5	5	5	0	0	0	0
8	9	9	8	1	0	0	0
9	2	2	2	0	0	0	0
10	0	0	0	0	0	0	0
11	1	1	0	1	0	0	0
12	1	1	0	0	0	1	0

† Isolation on dibasic acid sodium phosphate agar.
*One or more pair of gram negative intracellular diplococci.

MESENTERIC THROMBOSIS: REPORT OF CASE FOUR MONTHS OF AGE: FATAL

B. V. McClanahan, M.D.
GALESBURG, ILLINOIS

Because of the rarity of this condition, especially among very young children, I feel that this case is of sufficient interest to be reported.

A. N., male, was born July 4, 1925, being a perfectly developed and normal, healthy baby and the labor at the time of birth was normal. He had had no sickness of any consequence prior to the fatal illness here reported, nor had he had any spells of either constipation or diarrhea.

On October 24 his bowel movement was noticed to be much less in amount than usual and he was given a small enema of soap solution upon the doctor's order. This was returned clear in a short time. At this time he did not show any signs of distress and nursed normally through the greater part of the day.

October 25 he seemed apathetic, listless, refused to nurse and had no bowel movement during the day. Toward evening he developed a moaning, weak cry, which, however, did not appear indicative of any acute abdominal trouble. In the evening a teaspoonful of castor oil was given. Another enema was given and when this was returned a small amount of bright red blood came with it. The apathy and the moaning cry continued until early morning when Dr. G. H. Cowles was called and the case brought into the hospital. During the night, prior to entering the hospital, the patient had vomited several times, at first stomach contents and later clear greenish fluid.

Upon entrance to the hospital he appeared pale, sallow, was moaning and crying continuously and vomiting occasionally. The abdomen was slightly distended but palpation revealed no tumor mass nor did it seem to cause him any pain. His temperature was 101 rectally. He appeared toxic and hungry and with the exception of the history of no bowel movement there was little to indicate that the seat of the trouble was in the abdomen. A rather high, large enema was given, but it was returned soon afterward clear without any fecal or bloody material in it.

Everything was stopped by mouth and an ounce of 5% glucose solution given per rectum every hour. The vomiting ceased as soon as mouth feeding was stopped and he seemed more

comfortable. The temperature gradually rose until 4 p. m. it was 102.5 but by 11 p. m. it had receded to 101 again. During the day the distension gradually increased, the apathy also increased. At 10 p. m. another enema brought away with it a small hard mass of feces about the size of a navy bean, together with some mucus but no blood. At this time, upon the insistent demand of the parents, he was allowed to nurse for a few minutes with the result that he stopped voluntarily and promptly vomited the milk taken.

During the night all his symptoms grew worse and at 8 a. m. the following morning (October 27) his temperature was 103 and the pulse gradually increasing, having reached 160 at this time. Consultant's opinions of the case had continually considered the diagnosis of intestinal obstruction but the symptoms as a whole seemed too mild to fully warrant this conclusion. He had had, however, during his entire illness, the toxicity indicative of duodenal absorption and with this in mind and having explained the high mortality in such cases to the parents, operation was decided upon.

Under a minimal amount of ether anesthesia a right rectus incision 5 cm. in length was made. The abdominal wall appeared almost bloodless and upon opening the peritoneum a small amount of dark reddish fluid escaped. The cecum appeared immediately in the wound, distended but otherwise normal. The large bowel was also slightly distended but otherwise normal. Inspection of the distal ileum for a distance of 12 to 15 inches revealed it to be flaccid, doughy, collapsed and bluish black in color. It had a peculiar soggy, lifeless feel. Stretching the mesentery of the affected portion of the small intestine showed the same condition to exist to its base, and with no pulsation in the vessels, which were filled with clotted blood. A diagnosis of mesentery thrombosis was made on these findings and as the prognosis was considered fatal, due to the large amount of small bowel involved, closure was immediately effected, without inspecting the remainder of the abdominal contents. Eleven minutes elapsed from beginning the anesthetic to complete closure.

The patient was returned to bed where the former symptomatic treatment, including external heat and rectal fluids, was again instituted. The patient died the following morning, a post mortem being refused.

The points of special interest in this case appear to me to be: 1. Age of the patient, four months. 2. Sudden yet insiduous onset. 3. Relative small amount of pain either subjective or objective. 4. Cessation of all vomiting by merely stopping oral feeding. 5. Toxicity out of proportion to other findings and symptoms. 6. Bright red blood following an enema given early in the illness. This, however, I feel was probably due to the technique in giving the enema rather than coming from the affected portion of the bowel.

I have been able to find practically nothing in the literature dealing with such a case. Mention is made frequently, in referring to similar conditions in adults, of such etiologic factors as endocarditis, atheroma, arteriosclerosis, cachexias, syphilis, neoplastic growths, adhesions and a multitude of other conditions none of which we could reasonably suspect as being present in this case. We are at a loss to know the cause of the condition in this case.

Frank[1] states that mesenteric thrombosis may occur at any age from one month on and there is certainly no small amount of truth in his further statement in the same article, helpless though this statement leaves us, that "there are several symptoms, which, carefully considered and properly interpreted, may at least suggest the correct diagnosis, although it is regretfully admitted that in the majority of instances a positive conclusion can be reached only at operation or necropsy."

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COFFEE DRINKING BY CHILDREN

Coffee drinking by children has long been regarded with disapproval by pediatricians. There are a number of objections to the practice, among which its harm to the nervous system is important. It is entirely conceivable that the use of caffein-containing beverages by the child will lead to the production of serious nervous defects later in life.

In their recent book, "Safeguarding Children's Nerves" (1924), Doctors Walsh and Foote clearly indicate that there is an increasing nervous instability of American people as demonstrated by the failure of many of our troops to withstand the stress and strain of active service. These writers believe that the numerous cases of shellshock which were suffered by many American soldiers in the World War were nothing more than cases of hysteria. It is possible that the early use of coffee has had a contributing

part in causing the lack of nervous balance that is exhibited by so many adults in this country.

The drinking of coffee in the United States is steadily increasing, and the average annual consumption now amounts to thirteen pounds or more per capita. No small portion of this coffee is used by children, as shown by a study of the diet of a large number of children of preschool age at Gary, Indiana. This survey was made by the Children's Bureau of the United States Department of Labor. The report mentions that "two-thirds of the entire group were found to drink coffee habitually, and forty per cent to have it more than once a day. Not only so, but in certain of the groups of foreign-born parentage, coffee was drunk by more than ninety per cent of the children, and three-fourths of the Polish group had it two or more times a day."

In 1912, C. K. Taylor, a psychologist, made a study of coffee drinking by school children. He found that out of a group of 464 children, over seventy per cent of them were coffee drinkers. Moreover, and more important still, he discovered that those children who drank the most coffee received the lowest grades. There is no doubt but that coffee drinking by children is generally deleterious to the nervous system of the child. But the greatest harm done to children by this drink is its replacing milk in the diet. The Gary report, referred to above, states that coffee drinking by children "appears to have been inversely proportional to the use of milk. Not only do the schedules show about the same percentage of children drinking coffee as those lacking milk, but a comparison of coffee drinking by milk groups shows the use of coffee to increase markedly as the amount of milk decreases." Commenting upon the disastrous effect of replacing milk by coffee, the report states further: "To leave out milk and substitute coffee plays havoc with any diet, whatever may be its redeeming features."

It is a well known fact that children easily acquire a taste for coffee and are less willing to drink milk after being permitted to use coffee. Miss Lucy H. Gillett, Superintendent of the Nutrition Bureau of the New York Association for Improving the Poor, says in this connection that "children should never be given tea or coffee, not even to flavor milk. They will more often like milk if they are not first taught the combination of milk and coffee."

There are two important reasons why coffee should not be given to children. First, it has the harmful effect of crowding milk out of the dietary of the child. Second, it is an undesirable and unneeded stimulant.

In view of the fact that a large number of American children, especially in the industrial classes, are coffee drinkers, the matter is worthy of serious consideration. —*From Mellon Institute of Industrial Research.*

A doctor says that a man may be drunk through suffering a severe shock. So that you need not even drink the whisky. It's sufficient to pay for it.—*Punch.*

THE DEAF CHILD'S THOUGHT

ELIZABETH TULLEY

A little boy with eyes of clearest light,
To all the sounds of earth had deafened grown;
And yet, sometimes he seemed to hear aright
Sounds that to hearing ears were all unknown.

He oft had sat within cathedral dim,
As master hands swept o'er the organ keys,
Felt the vibrations, as a mighty hymn
Rose prayer-imbued to heaven, upon the breeze.

[redacted]

One morning fair he passed in happy play,
To watch some birds, full throated, carolling,
Then to his teacher came in eager way—
"Does God play the organ for the birds to sing?"

LONGFELLOW ON THE LINKS

I drove a golf-ball into the air,
It fell to earth, I knew not where,
For I alas, was short of sight
And couldn't follow it in its flight.
I kicked my caddie into the air,
He fell to earth, I know not where,
For I deemed it a thing exceedingly vile,
That inferior caddie's superior smile.
Soon, soon after, I found the ball,
It had hardly budged from the tee at all;
And the caddie was standing sardonically grim—
I had kicked my opponent instead of him.

Boston Transcript.

Society Proceedings

ADAMS COUNTY

May 10, 1926. This was the regular meeting of the society held at the Quincy Elks' Club and was called to order at 8:15 P. M. by the president. Thirty members and eight guests were present.

Dr. Center reported the progress that the Orthopedic Committee had made and stated that they had met with the committee from the Women's Clubs and that the following arrangement would appear to be the best way to handle the proposed Orthopedic Clinic. The Clinic to be held on alternate months at each hospital and that same to be in charge of three men from the staff of the respective hospitals who would be entirely responsible for the conduction of the clinic. Dr. Center stated that another meeting would be held on May 12 with the committee from the Women's Clubs and if the society wished to endorse the formation of a clinic to be run as outlined above now was the time to approve of same. It was moved, seconded and carried that the society approve of the arrangements that have been submitted by the Orthopedic Committee. Dr. Koch, Chairman of a committee appointed to investigate matters pertaining to a local bath system asked for further time. The Secretary read a letter from the Quincy Elks' Lodge relative to charging $5.00 per meeting for the society and made a motion that a committee be appointed with Dr. Walter Stevenson as Chairman to investigate the desirability

of the society holding its meetings elsewhere or to continue with the present arrangements with the Elks' Lodge. Seconded and carried. The President appointed Drs. Stevenson, McReynolds and Knox on this committee. The Secretary called the attention of the membership to the fact that the Sheppard-Towner bill was at present before the U. S. Senate in an endeavor to have its provisions extended for another two years and if we wished to protest, now was the time to do it. Dr. Center made a motion that the Secretary telegraph both U. S. Senators and protest this matter. Seconded and carried. The Censors reported favorable upon the application for membership in the society of Dr. H. Claude Fortune of Payson, Ill., and he was duly elected by ballot.

Dr. Herman H. Cole of Springfield read a very interesting paper entitled, "Emergency and Elective Surgery in the Field of Pulmonary Medicine with Special Reference to Spontaneous Pneumothorax, Hemoptysis and Collapse Therapy." This paper was discussed by Drs. Calvert, Bitter, Center, Irwin, Smith of Kirksville, Mo., McReynolds, Koch, Shulian and Cole.

Through the courtesy of Dr. Calvert a motion picture of pulmonary tuberculosis by Dr. Cole of New York City was obtained but due to the fact that there was some faulty mechanism in the mation picture apparatus it was not shown. Dr. J. W. H. Pollard of Evanston, read the report of the health survey of Adams County which he had recently completed. This was discussed by Drs. Beirne, Center, Smith, Koch, Stevenson, Knox and Wells.

Adjournment was called about 10:45 P. M.

HAROLD SWANBERG, M. D., Secretary.

COOK COUNTY

CHICAGO MEDICAL SOCIETY

Regular Meeting, May 5, 1926

1. The Use of Iodine in Hyper-thyroidism, Paul Starr. Discussion, H. M. Richter.

2. Metabolism and the Anesthetic, Arthur E. Guedel, Indianapolis, Indiana. Discussion, Alex A. Goldfield.

Regular Meeting, May 12, 1926

1. Recent Observations on the Physiology of the Pancreas: A Hormone for External Pancreatic Secretion Proved, Andrew C. Ivy.

2. Blood Sugar as a Guide in the Treatment of Diabetes Mellitus, Walter H. Nadler.

3. Effect of Sympathectomy on Vascular Diseases of the Extremities, Loyal Davis.

4. The Reconstructive Surgery of Hand Injuries, Summer L. Koch.

Regular Meeting May 26, 1926

1. Two Case Reports: Case No. 1. Removal of a Large Root Cyst and Involved molar en masse. Illustrated by lantern slides. History—Diagnosis—Technique of Operation — Pathological Findings — Result. Case No. 2. Reconstruction of Mandible by bilateral resection. Illustrated by lantern slides. Demonstration of patient after report is made. History—Indications for Operation — Technique of Operation — Postoperative Treatment—Result, Louis Schultz. Apparatus constructed and applied for immobilization of mandible in Case No. 2, also postoperative treatment after patient returned home, R. C. Willett, Peoria, Illinois. Discussion — Frederick B. Moorehead and Herbert A. Potts.

2. Medicine in Europe, Carl Beck.

3. The Last of the Plaster Cast, Gilbert H. Wynekoop.

HENRY COUNTY

The Annual Meeting of the Henry County Medical Society was held at the Kewanee Public Library, Thursday, May 6, 1926, at 1 P. M. President G. D. Drennan presiding.

James N. Downs of Atkinson, a former member, was voted into the Society without the usual formalities.

Letter from Scott County Medical Society, Davenport, Ia., inviting us to attend a basket picnic June 23, 1926, was laid on the table.

A resolution was passed in favor of a Section of Radiology in Illinois State Medical Society.

The Henry County Crippled Children Clinics were endorsed by the Society.

The Tubercular Clinics, as held in the past and to be held in the future, were also indorsed.

A committee on Resolutions on the deaths of D. F. Stewart and Geo. Mikelsen was appointed by the chair. Committee: G. H. Hoffman, Kewanee; H. W. Waterous, Galva; and J. A. Gustafson, Orion. Cards of thanks for flowers from Mrs. D. F. Stewart, Mikelsen family and Dr. G. P. Noren were read and accepted.

P. J. McDermott was then elected delegate to the Illinois State Medical Meeting for the years 1926 and 1927. W. H. Conser, Cambridge, alternate for 1926 and 1927.

In preparation for the Tri-County Medical Meeting which is to be held in Kewanee in the fall, the following committee were elected: Program Committee, J. H. Oliver, G. H. Hoffman, and H. W. Waterous. Dinner Committee, C. A. Coffin, J. T. Boswell, and C. P. White. Arrangement Committee, H. N. Heflin, W. D. Hohman, and J. H. Murphy. Entertainment Committee, E. L. Eustice, W. T. Heaps, and J. A. Gustafson.

The secretary was instructed to accept transfer card of H. C. Begglestone when presented.

The election of officers resulted as follows: president, John H. Oliver, Kewanee; vice-president, J. E. Westerlund, Cambridge; secretary-treasurer, P. J. McDermott, Kewanee.

Appointed Board of Censors: Chairman, Chas. A. Coffin, Kewanee; J. A. Gustafson, Orion, and Robert H. Stewart, Galva.

Business session then adjourned.

At 2 o'clock the Scientific program was presented. Dr. Isaac D. Rawlings, Director of Public Health, Springfield, gave a very practical paper on Public Health, strongly advocating a County Health Officer to be a physician who would devote his entire time to this work, and not be in general practice.

Following this paper Dr. James G. Carr, Assistant Professor of Medicine of the Northwestern University Medical School, gave a very instructive paper "The Etiology, Diagnosis and Medical Treatment of Infections of the Kidneys."

The last paper of the afternoon was given by Dr. John A. Wolfer, Assistant Professor of Surgery, Northwestern University Medical School, Chicago, "The Pathology and Surgical Treatment of Kidney Infections." This paper was illustrated by stereopticon slides, and the doctor had a number of specimens of infected kidneys on exhibition, through the courtesy of the Northwestern University Medical School.

All three papers were well received and it was the opinion of those in attendance that the program was one of the best we have had in years. The papers were not only practical, but decidedly instructive and helpful.

There were physicians present from Kewanee, Galesburg, Galva, Bradford, Geneseo, Orion, Woodhull and Cambridge.

P. J. McDERMOTT, Secretary.

MASON COUNTY

The Mason County Medical Society met at Easton, Ill., May 3, 1926, at 8 P. M.

Dr. C. H. Stubenrauch of Havana, the president, called the meeting to order and election of officers was first in order.

Dr. C. H. Stubenrauch was re-elected for 1926-27 and Dr. W. R. Grant of Easton was re-elected secretary-treasurer.

Dr. F. L. Carey of Havana was elected delegate to the state meeting at Champaign the week of May 18, 19 and 20.

After the usual routine of business the society had the pleasure of having present our councilor Dr. S. E. Munson of Springfield, who gave us a good talk. After Dr. Munson, we listened to an excellent talk by Dr. Neal of Springfield, who has served so well for the Medical Society before the legislature.

Dr. I. D. Rawlings was present as was Dr. Don Deal, both of Springfield, who spoke to the doctors present.

It was a most pleasant and instructive meeting. The Mason County Society was highly pleased to have the Springfield doctors make a sacrifice to come and meet with us.

Nine members were present.

C. H. STUBENRAUCH, President.
W. R. GRANT, Secretary.

ROCK ISLAND COUNTY

The regular meeting of the Rock Island and Scott County Medical Societies was held Tuesday, May 11, at the LeClaire Hotel, in Moline.

The dinner, served at 6:30, was followed by a business session and the following program:

Bronchial Asthma, Its Successful Management. Dr. Burton Hazeltine, of Chicago, Consulting Oto-Laryngologist to Cook Co. Hospital and Attending same at Henrotin Memorial Hospital.

The Internist's Problem in Asthma. Dr. A. W. Lafarge, Chicago, attending physician at Henrotin Memorial Hospital.

Clinical Results of the New Method. Dr. Ralph Kuhns, Chicago, director of Department of Pediatrics, Ill. Post Graduate Medical School and West Side Hospital, Chicago.

Discussion, H. P. Miller, M. D., Rock Island, Ill., Guy C. Harkness, M. D., Davenport, Ia.

The following resolutions were passed at the business session:

WHEREAS, It is generally conceded that the giving of anesthetic is the practice of medicine.

WHEREAS, Courts have ruled that the giving of an anesthetic is the practice of medicine.

WHEREAS, The Board of Medical Examiners of several states have so ruled.

WHEREAS, It is against the spirit of the law, against the ethics of medicine and against the ruling of a large majority of accredited hospitals, for nurses or any one else not legally qualified to practice medicine to give an anesthetic.

Therefore be it resolved, That it shall be unethical for any member of the Rock Island County Medical Society to employ other than licensed and qualified physicians to administer anesthetics, except under supervision, in emergency.

JOHN C. SOUDERS,
A. T. LEIPOLD,
WM. D. CHAPMAN.

It was also unanimously voted to go on record against Senate Bill No, 4085, "to strengthen the Harrison Narcotic Act of December 17, 1914, as amended, and for other purposes."

And it was further unanimously voted to send a copy of these resolutions for publication in the ILLINOIS MEDICAL JOURNAL.

J HENRY FOWLER, Secretary.

Marriages

JOHN VINCENT LAMBERT to Miss Margaret May Carroll, both of Chicago, May 1.

Personals

The new Madison County Sanitarium at Edwardsville was formally opened to the public, May 7.

Dr. Bellenden S. Hutcheson has been reappointed health officer of Cairo.

Dr. Agnes V. Fuller addressed the Chicago Council of Medical Women, May 25, on "Cesarean Section."

Dr. George E. Shambaugh, Chicago, was guest of honor at a dinner given by the Morgan County Medical Society, May 3.

Dr. Glenn J. Tygett has resigned as city health

officer of Anna and accepted a position on the staff of the Anna State Hospital.

At the recent annual meeting of the Chicago Tuberculosis Society, Dr. Henry C. Sweany was elected president; Dr. Hiram H. Bay, vice president, and Dr. Walter H. Watterson, Maywood, secretary.

Dr. Edward S. Blaine has been elected president of the Chicago Roentgen Society; Dr. Walter T. Bronson, vice president, and Dr. Robert A. Arens, secretary-treasurer.

Dr. Cyrus H. Anderson, formerly superintendent of the Illinois State Hospital at Anna, assumed charge of the state hospital at Watertown, May 15, succeeding Dr. Joseph H. Ellingsworth, who was transferred to the state institution at Alton.

Dr. Augustus G. Polhman, professor and director of the department of anatomy, St. Louis University School of Medicine, St. Louis, gave an illustrated lecture before the Peoria Medical Society, Peoria, May 4, on "An Interpretation of Rudimentary Organs in the Human Body."

News Notes

—St. Anne's Hospital is drawing plans for a 250 bed addition which will cost about $800,000.

—Springfield's new $100,000 contagious disease hospital was opened May 13.

—The monthly clinical meeting of the Chicago Surgical Society was held at the Research and Educational Hospital, University of Illinois.

—The Albert Billings Memorial Hospital group at the University of Chicago will be turned over for operation about Jan. 1, 1927.

—The Garfield Park Hospital is planning a $690,000 building to be constructed on the site of the present nurses' home.

—The University of Chicago has been bequeathed $500,000 by the will of Mrs. Harriet Smith for the construction of a contagious disease hospital to be known as The Charles Gilman Smith Hospital.

—Construction work was started, May 3, on the new six story Rogers Park Hospital at 6970 North Clark Street, the capacity of which will be 102 beds. Dr. F. Patrick Machler, formerly superintendent of the Iroquois Hospital, is president of the organization.

—The annual meeting of the Chicago Neurological Society was held at the new prison at Statesville, May 22; among others, Dr. Sanger Brown, president, gave an historical sketch of the society; the scientific program was in charge of Dr. Herman M. Adler and his assistants.

—The new U. S. Veterans' Bureau Hospital, erected at Five Points, North Chicago, for the care of mentally ill veterans, was dedicated with appropriate ceremonies, May 15. Among the speakers at the ceremonies were Gen. Frank T. Hines, Washington, D. C., director of the Veterans' Bureau; Mr. Scott W. Lucas, commander of the American Legion, Department of Illinois, and other distinguished civilians.

—The final meeting of the season of the Chicago Ophthalmological Society will be at the Hotel Sherman, May 17; Dr. William H. Luedde, St. Louis University School of Medicine, St. Louis, will give an address on "The Mechanism of Accommodation," and Dr. Robert Von der Heydt will demonstrate the Nordenson-Zeiss camera for photographing the fundus.

—The meeting of the Physicians' Fellowship Club, Chicago, May 17, was held in honor of Dr. Jacob C. Krafft, president of the Illinois State Medical Society. Among those who rendered tribute to Dr. Krafft's service to medicine in Illinois were Drs. Edward H. Ochsner, John R. Neal, Harold M. Camp, James W. Vanderslice, Jeremiah H. Walsh and William D. Chapman.

—Rush Medical College will conduct, June 14-18, a clinic week for the benefit of its alumni, which will become an annual event if it proves of general interest. Members of the faculty have heartily responded to the plan, and suggestions from the alumni, addressed to Rush Medical College, Harrison and Wood streets, will be appreciated. The annual faculty and alumni dinner will be at the Auditorium Hotel, June 15, 7 p. m. Among other reunions, the 1916 class will hold its tenth anniversary at this time.

—The board of trustees of the Medical and Dental Arts Club include Drs. Frank Billings, William Allen Pusey, Jeremiah H. Walsh, Hugh N. MacKechnie, Charles E. Humiston, and, in the dental profession, Drs. Otto U. King, Charles N. Johnson, Alexander A. Goldsmith and M. M. Printz. Dr. John S. Nagel is the president of the club; Drs. John H. Cadmus and Robert H.

Hayes, vice presidents; Dr. Frederick R. Green, secretary; Dr. Harry B. Pinney, treasurer, and Mr. John A. King, business manager.

—Special features at the Mississippi Valley Conference on Tuberculosis, Chicago, June 14-16, Edgewater Beach Hotel, will be the annual banquet, a child health education luncheon, a seal sale conference, and a secretaries' luncheon; among the topics for discussion will be the education of the layman, after-care and employment of the tuberculosis, chest surgery, and tuberculosis in industry. Dr. Linsly R. Williams of the National Tuberculosis Association; Charles E. A. Winslow, Dr.P.H., president American Public Health Association; Dr. James A. Britton, Chicago; Dr. Anthony J. Lanza, New York; Drs. John M. Dodson, Frank L. Rector and Morris Fishbein, all of Chicago, will address the conference.

—Representatives of the larger medical libraries of Chicago met, May 8, to discuss the medical library situation of that city with a view to working out some form of cooperation whereby the duplication of expensive and rarely used material may be avoided and such material be made mutually accessible. As a preliminary to such action, it seemed necessary to agree on some outline of the scope of the various libraries. Those present were impressed with the importance of such cooperation and the benefits that might be expected in the expenditure of available funds as well as in the general administration of the several libraries. Dr. William F. Peterson, professor of general medicine, University of Illinois College of Medicine, was appointed chairman of a committee to work out some definite form of coordination.

Deaths

Edward Hiram Abbott, Elgin, Ill.; Rush Medical College, Chicago, 1895; a Fellow, A. M. A.; Spanish-American War veteran; for many years member and at one time president of the board of education; on the staffs of the Sherman and St. Joseph's hospitals; aged 59; died, April 12, following a long illness.

Eli Stillman Bailey, Chicago; Hahnemann Medical College and Hospital, Chicago, 1878; aged 74; died, April 26, at the Hinsdale (Ill.) Sanitarium, of cerebral hemorrhage.

Charles H. Boaz, Mattoon, Ill.; Chicago Homeopathic Medical College, 1890; aged 72; died, April 24, of angina pectoris.

Charles Wesley Bond, Chicago, Rush Medical College, Chicago, 1925; aged 26; died, April 25, of pneumonia.

John William Craddock, Chicago; University of Illinois, College of Medicine, Chicago, 1920; aged 31; died, March 9, following an operation for goiter.

Theodore J. Doederlein, Chicago; Medical Department of the University of Illinois, Chicago, 1894; a Fellow, A. M. A.; member of the Chicago Gynecological Society; on the staff of the Grant Hospital and formerly on the staff of the Deaconess Hospital; aged 54; died, April 7, of carcinoma of the stomach.

Charles Franklin Ely, Chicago; New York Homeopathic Medical College, 1876; aged 70; died, April 15, of heart disease.

Peter Eugene M. Goetz, Chicago; Western Reserve University School of Medicine, Cleveland, 1885; aged 62; died, March 28, of chronic myocarditis.

Herman Goodman, Chicago; University of Berlin, Germany, 1881; aged 70; died, April 1, of chronic interstitial nephritis and myocarditis.

Dwight J. Harris, Evanston, Ill.; University of Michigan Medical School, Ann Arbor, 1864; Civil War veteran; aged 88; died, March 23.

George W. Holt, McLeansboro, Ill.; University of Louisville School of Medicine, 1876; aged 77; died, April 11, of chronic nephritis.

Felix Kalacinski, Chicago; College of Physicians and Surgeons, Chicago, 1898; a Fellow, A. M. A.; aged 52; died, April 15, of carcinoma of the liver.

Clyde P. Kennedy, Decatur, Ill.; Medical College of Ohio, Cincinnati, 1880; aged 69; died, April 7, of heart disease.

William D. Matney, Greenville, Ill., (licensed, Illinois, 1878); Civil War veteran; aged 85; died, April 9, at the Soldiers' and Sailors' Home, Quincy, of paralysis.

Frank David Paul, Rock Island, Ill.; State University of Iowa College of Homeopathic Medicine, Iowa City, 1886; aged 64; died, May 3, of pneumonia.

Peyton Smith Pope, Benton, Ill.; University of Tennessee College of Medicine, Memphis, 1877; aged 75; died, in April, of pneumonia.

Edwin G. Proctor, Kane, Ill.; College of Physicians and Surgeons, Baltimore, 1882; member of the Illinois State Medical Society; aged 70; died, April 3, of heart disease and gastroduodenitis.

Hamilton Rush Riddle, Mechanicsburg, Ill.; Rush Medical College, Chicago; 1873; Civil War veteran; aged 84; died, April 17, of bronchopneumonia.

James H. Seyler, Preemption, Ill.; Western Reserve University School of Medicine, Cleveland, 1867; University of Pennsylvania School of Medicine, Philadelphia, 1868; also a druggist; for twenty-five years postmaster; aged 83; died, April 25, of senility.

Elmer E. Vaughan, Chicago; Hahnemann Medical College and Hospital, Chicago, 1889; a Fellow, A. M. A.; formerly professor of surgery at his alma mater; aged 60; died, April 30, of splenomyelogenous leukemia.

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